



SEQUENCE LISTING

<110> Carr, Antony M.
<120> Cell-Cycle Checkpoint Genes
<130> 27866/34132
<140> 09/029,047
<141> 1999-05-11

<150> PCT/GB96/02197
<151> 1996-09-06

<150> GB 9518220.0
<151> 1995-09-06

<160> 14

<170> PatentIn Ver. 3.1

<210> 1
<211> 8239
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (80)..(8011)

<400> 1
gcgcctcttcc ggcagcggta cgtttgagaga cgccgggaac ccgcgttggc gtgggttgact 60
agtgcctcgc agcctcagc atg ggg gaa cat ggc ctg gag ctg gct tcc atg 112
Met Gly Glu His Gly Leu Glu Leu Ala Ser Met
1 5 10

atc ccc gcc ctg cgg gag ctg ggc agt gcc aca cca gag gaa tat aat 160
Ile Pro Ala Leu Arg Glu Leu Gly Ser Ala Thr Pro Glu Glu Tyr Asn
15 20 25

aca gtt gta cag aag cca aga caa att ctg tgt caa ttc att gac cgg 208
Thr Val Val Gln Lys Pro Arg Gln Ile Leu Cys Gln Phe Ile Asp Arg
30 35 40

ata ctt aca gat gta aat gtt gtt gct gta gaa ctt gta aag aaa act 256
Ile Leu Thr Asp Val Asn Val Val Ala Val Glu Leu Val Lys Lys Thr
45 50 55

gac tct cag cca acc tcc gtg atg ttg ctt gat ttc atc cag cat atc 304
Asp Ser Gln Pro Thr Ser Val Met Leu Leu Asp Phe Ile Gln His Ile
60 65 70 75

atg aaa tcc tcc cca ctt atg ttt gta aat gtg agt gga agc cat gag 352
Met Lys Ser Ser Pro Leu Met Phe Val Asn Val Ser Gly Ser His Glu
80 85 90

cgc aaa ggc agt tgt att gaa ttc agt aat tgg atc ata acg aga ctt 400
Arg Lys Gly Ser Cys Ile Glu Phe Ser Asn Trp Ile Ile Thr Arg Leu
95 100 105

ctg	cgg	att	gca	gca	act	ccc	tcc	tgt	cat	ttg	tta	cac	aag	aaa	atc	448
Leu	Arg	Ile	Ala	Ala	Thr	Pro	Ser	Cys	His	Leu	Leu	His	Lys	Lys	Ile	
		110					115					120				
tgt	gaa	gtc	atc	tgt	tca	tta	tta	ttt	ctt	ttt	aaa	agc	aag	agt	cct	496
Cys	Glu	Val	Ile	Cys	Ser	Leu	Leu	Phe	Leu	Phe	Lys	Ser	Lys	Ser	Pro	
	125					130					135					
gct	att	ttt	ggg	gta	ctc	aca	aaa	gaa	tta	tta	caa	ctt	ttt	gaa	gac	544
Ala	Ile	Phe	Gly	Val	Leu	Thr	Lys	Glu	Leu	Leu	Gln	Leu	Phe	Glu	Asp	
	140				145					150				155		
ttg	gtt	tac	ctc	cat	aga	aga	aat	gtg	atg	ggg	cat	gct	gtg	gaa	tgg	592
Leu	Val	Tyr	Leu	His	Arg	Arg	Asn	Val	Met	Gly	His	Ala	Val	Glu	Trp	
			160					165						170		
cca	gtg	gtc	atg	agc	cga	ttt	tta	agt	caa	tta	gat	gaa	cac	atg	gga	640
Pro	Val	Val	Met	Ser	Arg	Phe	Leu	Ser	Gln	Leu	Asp	Glu	His	Met	Gly	
		175					180						185			
tat	tta	caa	tca	gct	cct	ttg	cag	ttg	atg	agt	atg	caa	aat	tta	gaa	688
Tyr	Leu	Gln	Ser	Ala	Pro	Leu	Gln	Leu	Met	Ser	Met	Gln	Asn	Leu	Glu	
	190					195						200				
ttt	att	gaa	gtc	act	tta	tta	atg	gtt	ctt	act	cgt	att	att	gca	att	736
Phe	Ile	Glu	Val	Thr	Leu	Leu	Met	Val	Leu	Thr	Arg	Ile	Ile	Ala	Ile	
	205				210						215					
gtg	ttt	ttt	aga	agg	caa	gaa	ctc	tta	ctt	tgg	cag	ata	ggg	tgt	gtt	784
Val	Phe	Phe	Arg	Arg	Gln	Glu	Leu	Leu	Leu	Trp	Gln	Ile	Gly	Cys	Val	
	220				225				230					235		
ctg	cta	gag	tat	ggg	agt	cca	aaa	att	aaa	tcc	cta	gca	att	agc	ttt	832
Leu	Leu	Glu	Tyr	Gly	Ser	Pro	Lys	Ile	Lys	Ser	Leu	Ala	Ile	Ser	Phe	
			240					245						250		
tta	aca	gaa	ctt	ttt	cag	ctt	gga	gga	cta	cca	gca	caa	cca	gct	agc	880
Leu	Thr	Glu	Leu	Phe	Gln	Leu	Gly	Gly	Leu	Pro	Ala	Gln	Pro	Ala	Ser	
		255					260					265				
act	ttt	ttc	agc	tca	ttt	ttg	gaa	tta	tta	aaa	cac	ctt	gta	gaa	atg	928
Thr	Phe	Phe	Ser	Ser	Phe	Leu	Glu	Leu	Leu	Lys	His	Leu	Val	Glu	Met	
	270					275						280				
gat	act	gac	caa	ttg	aaa	ctc	tat	gaa	gag	cca	tta	tca	aag	ctg	ata	976
Asp	Thr	Asp	Gln	Leu	Lys	Leu	Tyr	Glu	Glu	Pro	Leu	Ser	Lys	Leu	Ile	
	285					290				295						
aag	aca	cta	ttt	ccc	ttt	gaa	gca	gaa	gct	tat	aga	aat	att	gaa	cct	1024
Lys	Thr	Leu	Phe	Pro	Phe	Glu	Ala	Glu	Ala	Tyr	Arg	Asn	Ile	Glu	Pro	
	300				305					310				315		
gtc	tat	tta	aat	atg	ctg	ctg	gaa	aaa	ctc	tgt	gtc	atg	ttt	gaa	gac	1072
Val	Tyr	Leu	Asn	Met	Leu	Leu	Glu	Lys	Leu	Cys	Val	Met	Phe	Glu	Asp	
			320					325						330		
ggg	gtg	ctc	atg	cgg	ctt	aag	tct	gat	ttg	cta	aaa	gca	gct	ttg	tgc	1120
Gly	Val	Leu	Met	Arg	Leu	Lys	Ser	Asp	Leu	Leu	Lys	Ala	Ala	Leu	Cys	
		335					340					345				
cat	tta	ctg	cag	tat	ttc	ctt	aaa	ttt	gtg	cca	gct	ggg	tat	gaa	tct	1168
His	Leu	Leu	Gln	Tyr	Phe	Leu	Lys	Phe	Val	Pro	Ala	Gly	Tyr	Glu	Ser	
	350					355						360				

gct tta caa gtc agg aag gtc tat gtg aga aat att tgt aaa gct ctt	1216
Ala Leu Gln Val Arg Lys Val Tyr Val Arg Asn Ile Cys Lys Ala Leu	
365 370 375	
ttg gat gtg ctt gga att gag gta gat gca gag tac ttg ttg ggc cca	1264
Leu Asp Val Leu Gly Ile Glu Val Asp Ala Glu Tyr Leu Leu Gly Pro	
380 385 390 395	
ctt tat gca gct ttg aaa atg gaa agt atg gaa atc att gag gag att	1312
Leu Tyr Ala Ala Leu Lys Met Glu Ser Met Glu Ile Ile Glu Glu Ile	
400 405 410	
caa tgc caa act caa cag gaa aac ctc agc agt aat agt gat gga ata	1360
Gln Cys Gln Thr Gln Gln Glu Asn Leu Ser Ser Asn Ser Asp Gly Ile	
415 420 425	
tca ccc aaa agg cgt cgt ctc agc tcg tct cta aac cct tct aaa aga	1408
Ser Pro Lys Arg Arg Arg Leu Ser Ser Leu Asn Pro Ser Lys Arg	
430 435 440	
gca cca aaa cag act gag gaa att aaa cat gtg gac atg aac caa aag	1456
Ala Pro Lys Gln Thr Glu Glu Ile Lys His Val Asp Met Asn Gln Lys	
445 450 455	
agc ata tta tgg agt gca ctg aaa cag aaa gct gaa tcc ctt cag att	1504
Ser Ile Leu Trp Ser Ala Leu Lys Gln Lys Ala Glu Ser Leu Gln Ile	
460 465 470 475	
tcc ctt gaa tac agt ggc cta aag aat cct gtt att gag atg tta gaa	1552
Ser Leu Glu Tyr Ser Gly Leu Lys Asn Pro Val Ile Glu Met Leu Glu	
480 485 490	
gga att gct gtt gtc tta caa ctg act gct ctg tgt act gtt cat tgt	1600
Gly Ile Ala Val Val Leu Gln Leu Thr Ala Leu Cys Thr Val His Cys	
495 500 505	
tct cat caa aac atg aac tgc cgt act ttc aag gac tgt caa cat aaa	1648
Ser His Gln Asn Met Asn Cys Arg Thr Phe Lys Asp Cys Gln His Lys	
510 515 520	
tcc aag aag aaa cct tct gta gtg ata act tgg atg tca ttg gat ttt	1696
Ser Lys Lys Lys Pro Ser Val Val Ile Thr Trp Met Ser Leu Asp Phe	
525 530 535	
tac aca aaa gtg ctt aag agc tgt aga agt ttg tta gaa tct gtt cag	1744
Tyr Thr Lys Val Leu Lys Ser Cys Arg Ser Leu Leu Glu Ser Val Gln	
540 545 550 555	
aaa ctg gac ctg gag gca acc att gat aag gtg gtg aaa att tat gat	1792
Lys Leu Asp Leu Glu Ala Thr Ile Asp Lys Val Val Lys Ile Tyr Asp	
560 565 570	
gct ttg att tat atg caa gta aac agt tca ttt gaa gat cat atc ctg	1840
Ala Leu Ile Tyr Met Gln Val Asn Ser Ser Phe Glu Asp His Ile Leu	
575 580 585	
gaa gat tta tgt ggt atg ctc tca ctt cca tgg att tat tcc cat tct	1888
Glu Asp Leu Cys Gly Met Leu Ser Leu Pro Trp Ile Tyr Ser His Ser	
590 595 600	
gat gat ggc tgt tta aag ttg acc aca ttt gcc gct aat ctt cta aca	1936
Asp Asp Gly Cys Leu Lys Leu Thr Thr Phe Ala Ala Asn Leu Leu Thr	
605 610 615	

tta agc tgt agg att tca gat agc tat tca cca cag gca caa tca cga	1984
Leu Ser Cys Arg Ile Ser Asp Ser Tyr Ser Pro Gln Ala Gln Ser Arg	
620 625 630 635	
tgt gtg ttt ctt ctg act ctg ttt cca aga aga ata ttc ctt gag tgg	2032
Cys Val Phe Leu Leu Thr Leu Phe Pro Arg Arg Ile Phe Leu Glu Trp	
640 645 650	
aga aca gca gtt tac aac tgg gcc ctg cag agc tcc cat gaa gta atc	2080
Arg Thr Ala Val Tyr Asn Trp Ala Leu Gln Ser Ser His Glu Val Ile	
655 660 665	
cgg gct agt tgt gtt agt gga ttt ttt atc tta ttg cag cag cag aat	2128
Arg Ala Ser Cys Val Ser Gly Phe Phe Ile Leu Leu Gln Gln Gln Asn	
670 675 680	
tct tgt aac aga gtt ccc aag att ctt ata gat aaa gtc aaa gat gat	2176
Ser Cys Asn Arg Val Pro Lys Ile Leu Ile Asp Lys Val Lys Asp Asp	
685 690 695	
tct gac att gtc aag aaa gaa ttt gct tct ata ctt ggt caa ctt gtc	2224
Ser Asp Ile Val Lys Lys Glu Phe Ala Ser Ile Leu Gly Gln Leu Val	
700 705 710 715	
tgt act ctt cac ggc atg ttt tat ctg aca agt tct tta aca gaa cct	2272
Cys Thr Leu His Gly Met Phe Tyr Leu Thr Ser Ser Leu Thr Glu Pro	
720 725 730	
ttc tct gaa cac gga cat gtg gac ctc ttc tgt agg aac ttg aaa gcc	2320
Phe Ser Glu His Gly His Val Asp Leu Phe Cys Arg Asn Leu Lys Ala	
735 740 745	
act tct caa cat gaa tgt tca tct tct caa cta aaa gct tct gtc tgc	2368
Thr Ser Gln His Glu Cys Ser Ser Ser Gln Leu Lys Ala Ser Val Cys	
750 755 760	
aag cca ttc ctt ttc cta ctg aaa aaa aaa ata cct agt cca gta aaa	2416
Lys Pro Phe Leu Phe Leu Leu Lys Lys Lys Ile Pro Ser Pro Val Lys	
765 770 775	
ctt gct ttc ata gat aat cta cat cat ctt tgt aag cat ctt gat ttt	2464
Leu Ala Phe Ile Asp Asn Leu His His Leu Cys Lys His Leu Asp Phe	
780 785 790 795	
aga gaa gat gaa aca gat gta aaa gca gtt ctt gga act tta tta aat	2512
Arg Glu Asp Glu Thr Asp Val Lys Ala Val Leu Gly Thr Leu Leu Asn	
800 805 810	
tta atg gaa gat cca gac aaa gat gtt aga gtg gct ttt agt gga aat	2560
Leu Met Glu Asp Pro Asp Lys Asp Val Arg Val Ala Phe Ser Gly Asn	
815 820 825	
atc aag cac ata ttg gaa tcc ttg gac tct gaa gat gga ttt ata aag	2608
Ile Lys His Ile Leu Glu Ser Leu Asp Ser Glu Asp Gly Phe Ile Lys	
830 835 840	
gag ctt ttt gtc tta aga atg aag gaa gca tat aca cat gcc caa ata	2656
Glu Leu Phe Val Leu Arg Met Lys Glu Ala Tyr Thr His Ala Gln Ile	
845 850 855	
tca aga aat aat gag ctg aag gat acc ttg att ctt aca aca ggg gat	2704
Ser Arg Asn Asn Glu Leu Lys Asp Thr Leu Ile Leu Thr Thr Gly Asp	
860 865 870 875	

att gga agg gcc gca aaa gga gat ttg gta cca ttt gca ctc tta cac	2752
Ile Gly Arg Ala Lys Gly Asp Leu Val Pro Phe Ala Leu Leu His	
880 885 890	
tta ttg cat tgt ttg tta tcc aag tca gca tct gtc tct gga gca gca	2800
Leu Leu His Cys Leu Leu Ser Lys Ser Ala Ser Val Ser Gly Ala Ala	
895 900 905	
tac aca gaa att aga gct ctg gtt gca gct aaa agt gtt aaa ctg caa	2848
Tyr Thr Glu Ile Arg Ala Leu Val Ala Ala Lys Ser Val Lys Leu Gln	
910 915 920	
agt ttt ttc agc cag tat aag aaa ccc atc tgt cag ttt ttg gta gaa	2896
Ser Phe Phe Ser Gln Tyr Lys Lys Pro Ile Cys Gln Phe Leu Val Glu	
925 930 935	
tcc ctt cac tct agt cag atg aca gca ctt ccg aat act cca tgc cag	2944
Ser Leu His Ser Ser Gln Met Thr Ala Leu Pro Asn Thr Pro Cys Gln	
940 945 950 955	
aat gct gac gtg cga aaa caa gat gtg gct cac cag aga gaa atg gct	2992
Asn Ala Asp Val Arg Lys Gln Asp Val Ala His Gln Arg Glu Met Ala	
960 965 970	
tta aat acg ttg tct gaa att gcc aac gtt ttc gac ttt cct gat ctt	3040
Leu Asn Thr Leu Ser Glu Ile Ala Asn Val Phe Asp Phe Pro Asp Leu	
975 980 985	
aat cgt ttt ctt act agg aca tta caa gtt cta cta cct gat ctt gct	3088
Asn Arg Phe Leu Thr Arg Thr Leu Gln Val Leu Leu Pro Asp Leu Ala	
990 995 1000	
gcc aaa gca agc cct gca gct tct gct ctc att cga act tta gga aaa	3136
Ala Lys Ala Ser Pro Ala Ala Ser Ala Leu Ile Arg Thr Leu Gly Lys	
1005 1010 1015	
caa tta aat gtc aat cgt aga gag att tta ata aac aac ttc aaa tat	3184
Gln Leu Asn Val Asn Arg Arg Glu Ile Leu Ile Asn Asn Phe Lys Tyr	
1020 1025 1030 1035	
att ttt tct cat ttg gtc tgt tct tgt tcc aaa gat gaa tta gaa cgt	3232
Ile Phe Ser His Leu Val Cys Ser Cys Ser Lys Asp Glu Leu Glu Arg	
1040 1045 1050	
gcc ctt cat tat ctg aag aat gaa aca gaa att gaa ctg ggg agc ctg	3280
Ala Leu His Tyr Leu Lys Asn Glu Thr Glu Ile Glu Leu Gly Ser Leu	
1055 1060 1065	
ttg aga caa gat ttc caa gga ttg cat aat gaa tta ttg ctg cgt att	3328
Leu Arg Gln Asp Phe Gln Gly Leu His Asn Glu Leu Leu Leu Arg Ile	
1070 1075 1080	
gga gaa cac tat caa cag gtt ttt aat ggt ttg tca ata ctt gcc tca	3376
Gly Glu His Tyr Gln Gln Val Phe Asn Gly Leu Ser Ile Leu Ala Ser	
1085 1090 1095	
ttt gca tcc agt gat gat cca tat cag ggc ccg aga gat atc ata tca	3424
Phe Ala Ser Ser Asp Asp Pro Tyr Gln Gly Pro Arg Asp Ile Ile Ser	
1100 1105 1110 1115	
cct gaa ctg atg gct gat tat tta caa ccc aaa ttg ttg ggc att ttg	3472
Pro Glu Leu Met Ala Asp Tyr Leu Gln Pro Lys Leu Leu Gly Ile Leu	
1120 1125 1130	

gct ttt ttt aac atg cag tta ctg agc tct agt gtt ggc att gaa gat	3520
Ala Phe Phe Asn Met Gln Leu Leu Ser Ser Ser Val Gly Ile Glu Asp	
1135 1140 1145	
aag aaa atg gcc ttg aac agt ttg atg tct ttg atg aag tta atg gga	3568
Lys Lys Met Ala Leu Asn Ser Leu Met Ser Leu Met Lys Leu Met Gly	
1150 1155 1160	
ccc aaa cat gtc agt tct gtg agg gtg aag atg atg acc aca ctg aga	3616
Pro Lys His Val Ser Ser Val Arg Val Lys Met Met Thr Thr Leu Arg	
1165 1170 1175	
act ggc ctt cga ttc aag gat gat ttt cct gaa ttg tgt tgc aga gct	3664
Thr Gly Leu Arg Phe Lys Asp Asp Phe Pro Glu Leu Cys Cys Arg Ala	
1180 1185 1190 1195	
tgg gac tgc ttt gtt cgc tgc ctg gat cat gct tgt ctg ggc tcc ctt	3712
Trp Asp Cys Phe Val Arg Cys Leu Asp His Ala Cys-Leu Gly Ser Leu	
1200 1205 1210	
ctc agt cat gta ata gta gct ttg tta cct ctt ata cac atc cag cct	3760
Leu Ser His Val Ile Val Ala Leu Leu Pro Leu Ile His Ile Gln Pro	
1215 1220 1225	
aaa gaa act gca gct atc ttc cac tac ctc ata att gaa aac agg gat	3808
Lys Glu Thr Ala Ala Ile Phe His Tyr Leu Ile Ile Glu Asn Arg Asp	
1230 1235 1240	
gct gtg caa gat ttt ctt cat gaa ata tat ttt tta cct gat cat cca	3856
Ala Val Gln Asp Phe Leu His Glu Ile Tyr Phe Leu Pro Asp His Pro	
1245 1250 1255	
gaa tta aaa aag ata aaa gcc gtt ctc cag gaa tac aga aag gag acc	3904
Glu Leu Lys Lys Ile Lys Ala Val Leu Gln Glu Tyr Arg Lys Glu Thr	
1260 1265 1270 1275	
tct gag agc act gat ctt cag aca act ctt cag ctc tct atg aag gcc	3952
Ser Glu Ser Thr Asp Leu Gln Thr Thr Leu Gln Leu Ser Met Lys Ala	
1280 1285 1290	
att caa cat gaa aat gtc gat gtt cgt att cat gct ctt aca agc ttg	4000
Ile Gln His Glu Asn Val Asp Val Arg Ile His Ala Leu Thr Ser Leu	
1295 1300 1305	
aag gaa acc ttg tat aaa aat cag gaa aaa ctg ata aag tat gca aca	4048
Lys Glu Thr Leu Tyr Lys Asn Gln Glu Lys Leu Ile Lys Tyr Ala Thr	
1310 1315 1320	
gac agt gaa aca gta gaa cct att atc tca cag ttg gtg aca gtg ctt	4096
Asp Ser Glu Thr Val Glu Pro Ile Ile Ser Gln Leu Val Thr Val Leu	
1325 1330 1335	
ttg aaa ggt tgc caa gat gca aac tct caa gct cgg ttg ctc tgt ggg	4144
Leu Lys Gly Cys Gln Asp Ala Asn Ser Gln Ala Arg Leu Leu Cys Gly	
1340 1345 1350 1355	
gaa tgt tta ggg gaa ttg ggg gcg ata gat cca ggt cga tta gat ttc	4192
Glu Cys Leu Gly Glu Leu Gly Ala Ile Asp Pro Gly Arg Leu Asp Phe	
1360 1365 1370	
tca aca act gaa act caa gga aaa gat ttt aca ttt gtg act gga gta	4240
Ser Thr Thr Glu Thr Gln Gly Lys Asp Phe Thr Phe Val Thr Gly Val	
1375 1380 1385	

gaa gat tca agc ttt gcc tat gga tta ttg atg gag cta aca aga gct Glu Asp Ser Ser Phe Ala Tyr Gly Leu Leu Met Glu Leu Thr Arg Ala 1390 1395 1400	4288
tac ctt gcg tat gct gat aat agc cga gct caa gat tca gct gcc tat Tyr Leu Ala Tyr Ala Asp Asn Ser Arg Ala Gln Asp Ser Ala Ala Tyr 1405 1410 1415	4336
gcc att cag gag ttg ctt tct att tat gac tgt aga gag atg gag acc Ala Ile Gln Glu Leu Leu Ser Ile Tyr Asp Cys Arg Glu Met Glu Thr 1420 1425 1430 1435	4384
aac ggc cca ggt cac caa ttg tgg agg aga ttt cct gag cat gtt cgg Asn Gly Pro Gly His Gln Leu Trp Arg Arg Phe Pro Glu His Val Arg 1440 1445 1450	4432
gaa ata cta gaa cct cat cta aat acc aga tac aag agt tct cag aag Glu Ile Leu Glu Pro His Leu Asn Thr Arg Tyr Lys Ser Ser Gln Lys 1455 1460 1465	4480
tca acc gat tgg tct gga gta aag aag cca att tac tta agt aaa ttg Ser Thr Asp Trp Ser Gly Val Lys Lys Pro Ile Tyr Leu Ser Lys Leu 1470 1475 1480	4528
ggt agt aac ttt gca gaa tgg tca gca tct tgg gca ggt tat ctt att Gly Ser Asn Phe Ala Glu Trp Ser Ala Ser Trp Ala Gly Tyr Leu Ile 1485 1490 1495	4576
aca aag gtt cga cat gat ctt gcc agt aaa att ttc acc tgc tgt agc Thr Lys Val Arg His Asp Leu Ala Ser Lys Ile Phe Thr Cys Cys Ser 1500 1505 1510 1515	4624
att atg atg aag cat gat ttc aaa gtg acc atc tat ctt ctt cca cat Ile Met Met Lys His Asp Phe Lys Val Thr Ile Tyr Leu Leu Pro His 1520 1525 1530	4672
att ctg gtg tat gtc tta ctg ggt tgt aat caa gaa gat cag cag gag Ile Leu Val Tyr Val Leu Leu Gly Cys Asn Gln Glu Asp Gln Gln Glu 1535 1540 1545	4720
gtt tat gca gaa att atg gca gtt cta aag cat gac gat cag cat acc Val Tyr Ala Glu Ile Met Ala Val Leu Lys His Asp Asp Gln His Thr 1550 1555 1560	4768
ata aat acc caa gac att gca tct gat ctg tgt caa ctc agt aca cag Ile Asn Thr Gln Asp Ile Ala Ser Asp Leu Cys Gln Leu Ser Thr Gln 1565 1570 1575	4816
act gtg ttc tcc atg ctt gac cat ctc aca cag tgg gca agg cac aaa Thr Val Phe Ser Met Leu Asp His Leu Thr Gln Trp Ala Arg His Lys 1580 1585 1590 1595	4864
ttt cag gca ctg aaa gct gag aaa tgt cca cac agc aaa tca aac aga Phe Gln Ala Leu Lys Ala Glu Lys Cys Pro His Ser Lys Ser Asn Arg 1600 1605 1610	4912
aat aag gta gac tca atg gta tct act gtg gat tat gaa gac tat cag Asn Lys Val Asp Ser Met Val Ser Thr Val Asp Tyr Glu Asp Tyr Gln 1615 1620 1625	4960
agt gta acc cgt ttt cta gac ctc ata ccc cag gat act ctg gca gta Ser Val Thr Arg Phe Leu Asp Leu Ile Pro Gln Asp Thr Leu Ala Val 1630 1635 1640	5008

gct tcc ttt cgc tcc aaa gca tac aca cga gct gta atg cac ttt gaa	5056
Ala Ser Phe Arg Ser Lys Ala Tyr Thr Arg Ala Val Met His Phe Glu	
1645 1650 1655	
tca ttt att aca gaa aag aag caa aat att cag gaa cat ctt gga ttt	5104
Ser Phe Ile Thr Glu Lys Lys Gln Asn Ile Gln Glu His Leu Gly Phe	
1660 1665 1670 1675	
tta cag aaa ttg tat gct gct atg cat gaa cct gat gga gtg gcc gga	5152
Leu Gln Lys Leu Tyr Ala Ala Met His Glu Pro Asp Gly Val Ala Gly	
1680 1685 1690	
gtc agt gca att aga aag gca gaa cca tct cta aaa gaa cag atc ctt	5200
Val Ser Ala Ile Arg Lys Ala Glu Pro Ser Leu Lys Glu Gln Ile Leu	
1695 1700 1705	
gaa cat gaa agc ctt ggc ttg ctg agg gat gcc act gct tgt tat gac	5248
Glu His Glu Ser Leu Gly Leu Leu Arg Asp Ala Thr Ala Cys Tyr Asp	
1710 1715 1720	
agg gct att cag cta gaa cca gac cag atc att cat tat cat ggt gta	5296
Arg Ala Ile Gln Leu Glu Pro Asp Gln Ile Ile His Tyr His Gly Val	
1725 1730 1735	
gta aag tcc atg tta ggt ctt ggt cag ctg tct act gtt atc act cag	5344
Val Lys Ser Met Leu Gly Leu Gly Gln Leu Ser Thr Val Ile Thr Gln	
1740 1745 1750 1755	
gtg aat gga gtg cat gct aac agg tcc gag tgg aca gat gaa tta aac	5392
Val Asn Gly Val His Ala Asn Arg Ser Glu Trp Thr Asp Glu Leu Asn	
1760 1765 1770	
acg tac aga gtg gaa gca gct tgg aaa ttg tca cag tgg gat ttg gtg	5440
Thr Tyr Arg Val Glu Ala Ala Trp Lys Leu Ser Gln Trp Asp Leu Val	
1775 1780 1785	
gaa aac tat ttg gca gca gat gga aaa tct aca aca tgg agt gtc aga	5488
Glu Asn Tyr Leu Ala Ala Asp Gly Lys Ser Thr Thr Trp Ser Val Arg	
1790 1795 1800	
ctg gga cag cta tta tta tca gcc aaa aaa aga gat atc aca gct ttt	5536
Leu Gly Gln Leu Leu Leu Ser Ala Lys Lys Arg Asp Ile Thr Ala Phe	
1805 1810 1815	
tat gac tca ctg aaa cta gtg aga gca gaa caa att gta cct ctt tca	5584
Tyr Asp Ser Leu Lys Leu Val Arg Ala Glu Gln Ile Val Pro Leu Ser	
1820 1825 1830 1835	
gct gca agc ttt gaa aga ggc tcc tac caa cga gga tat gaa tat att	5632
Ala Ala Ser Phe Glu Arg Gly Ser Tyr Gln Arg Gly Tyr Glu Tyr Ile	
1840 1845 1850	
gtg aga ttg cac atg tta tgt gag ttg gag cat agc atc aaa cca ctt	5680
Val Arg Leu His Met Leu Cys Glu Leu Glu His Ser Ile Lys Pro Leu	
1855 1860 1865	
ttc cag cat tct cca ggt gac agt tct caa gaa gat tct cta aac tgg	5728
Phe Gln His Ser Pro Gly Asp Ser Ser Gln Glu Asp Ser Leu Asn Trp	
1870 1875 1880	
gta gct cga cta gaa atg acc cag aat tcc tac aga gcc aag gac cct	5776
Val Ala Arg Leu Glu Met Thr Gln Asn Ser Tyr Arg Ala Lys Asp Pro	
1885 1890 1895	

atc	ctg	gct	ctc	cgg	agg	gct	tta	cta	agc	ctc	aac	aaa	aga	cca	gat	5824
Ile	Leu	Ala	Leu	Arg	Arg	Ala	Leu	Leu	Ser	Leu	Asn	Lys	Arg	Pro	Asp	
1900					1905					1910					1915	
tac	aat	gaa	atg	gtt	gga	gaa	tgc	tgg	ctg	cag	agt	gcc	agg	gta	gct	5872
Tyr	Asn	Glu	Met	Val	Gly	Glu	Cys	Trp	Leu	Gln	Ser	Ala	Arg	Val	Ala	
				1920					1925					1930		
aga	aag	gct	ggt	cac	cac	cag	aca	gcc	tac	aat	gct	ctc	ctt	aat	gca	5920
Arg	Lys	Ala	Gly	His	His	Gln	Thr	Ala	Tyr	Asn	Ala	Leu	Leu	Asn	Ala	
			1935					1940						1945		
ggg	gaa	tca	cga	ctc	gct	gaa	ctg	tac	gtg	gaa	agg	gca	aag	tgg	ctc	5968
Gly	Glu	Ser	Arg	Leu	Ala	Glu	Leu	Tyr	Val	Glu	Arg	Ala	Lys	Trp	Leu	
		1950					1955					1960				
tgg	tcc	aag	ggt	gat	gtt	cac	cag	gca	cta	att	gtt	ctt	caa	aaa	ggt	6016
Trp	Ser	Lys	Gly	Asp	Val	His	Gln	Ala	Leu	Ile	Val	Leu	Gln	Lys	Gly	
		1965				1970					1975					
gtt	gaa	tta	tgt	ttt	cct	gaa	aat	gaa	acc	cca	cct	gag	ggt	aag	aac	6064
Val	Glu	Leu	Cys	Phe	Pro	Glu	Asn	Glu	Thr	Pro	Pro	Glu	Gly	Lys	Asn	
1980					1985					1990					1995	
atg	tta	atc	cat	ggt	cga	gct	atg	cta	cta	gtg	ggc	cga	ttt	atg	gaa	6112
Met	Leu	Ile	His	Gly	Arg	Ala	Met	Leu	Leu	Val	Gly	Arg	Phe	Met	Glu	
				2000					2005					2010		
gaa	aca	gct	aac	ttt	gaa	agc	aat	gca	att	atg	aaa	aaa	tat	aag	gat	6160
Glu	Thr	Ala	Asn	Phe	Glu	Ser	Asn	Ala	Ile	Met	Lys	Lys	Tyr	Lys	Asp	
			2015					2020					2025			
gtg	acc	gcg	tgc	ctg	cca	gaa	tgg	gag	gat	ggg	cat	ttt	tac	ctt	gcc	6208
Val	Thr	Ala	Cys	Leu	Pro	Glu	Trp	Glu	Asp	Gly	His	Phe	Tyr	Leu	Ala	
		2030					2035					2040				
aag	tac	tat	gac	aaa	ttg	atg	ccc	atg	gtc	aca	gac	aac	aaa	atg	gaa	6256
Lys	Tyr	Tyr	Asp	Lys	Leu	Met	Pro	Met	Val	Thr	Asp	Asn	Lys	Met	Glu	
		2045				2050					2055					
aag	caa	ggt	gat	ctc	atc	cgg	tat	ata	gtt	ctt	cat	ttt	ggc	aga	tct	6304
Lys	Gln	Gly	Asp	Leu	Ile	Arg	Tyr	Ile	Val	Leu	His	Phe	Gly	Arg	Ser	
2060					2065					2070					2075	
cta	caa	tat	gga	aat	cag	ttc	ata	tat	cag	tca	atg	cca	cga	atg	tta	6352
Leu	Gln	Tyr	Gly	Asn	Gln	Phe	Ile	Tyr	Gln	Ser	Met	Pro	Arg	Met	Leu	
				2080					2085					2090		
act	cta	tgg	ctt	gat	tat	ggt	aca	aag	gca	tat	gaa	tgg	gaa	aaa	gct	6400
Thr	Leu	Trp	Leu	Asp	Tyr	Gly	Thr	Lys	Ala	Tyr	Glu	Trp	Glu	Lys	Ala	
			2095					2100					2105			
ggc	cgc	tcc	gat	cgt	gta	caa	atg	agg	aat	gat	ttg	ggt	aaa	ata	aac	6448
Gly	Arg	Ser	Asp	Arg	Val	Gln	Met	Arg	Asn	Asp	Leu	Gly	Lys	Ile	Asn	
		2110					2115					2120				
aag	gtt	atc	aca	gag	cat	aca	aac	tat	tta	gct	cca	tat	caa	ttt	ttg	6496
Lys	Val	Ile	Thr	Glu	His	Thr	Asn	Tyr	Leu	Ala	Pro	Tyr	Gln	Phe	Leu	
		2125				2130					2135					
act	gct	ttt	tca	caa	ttg	atc	tct	cga	att	tgt	cat	tct	cac	gat	gaa	6544
Thr	Ala	Phe	Ser	Gln	Leu	Ile	Ser	Arg	Ile	Cys	His	Ser	His	Asp	Glu	
2140					2145					2150					2155	

gtt ttt gtt gtc ttg atg gaa ata ata gcc aaa gta ttt cta gcc tat	6592
Val Phe Val Val Leu Met Glu Ile Ile Ala Lys Val Phe Leu Ala Tyr	
2160 2165 2170	
cct caa caa gca atg tgg atg atg aca gct gtg tca aag tca tct tat	6640
Pro Gln Gln Ala Met Trp Met Met Thr Ala Val Ser Lys Ser Ser Tyr	
2175 2180 2185	
ccc atg cgt gtg aac aga tgc aag gaa atc ctc aat aaa gct att cat	6688
Pro Met Arg Val Asn Arg Cys Lys Glu Ile Leu Asn Lys Ala Ile His	
2190 2195 2200	
atg aaa aaa tcc tta gag aag ttt gtt gga gat gca act cgc cta aca	6736
Met Lys Lys Ser Leu Glu Lys Phe Val Gly Asp Ala Thr Arg Leu Thr	
2205 2210 2215	
gat aag ctt cta gaa ttg tgc aat aaa ccg gtt gat gga agt agt tcc	6784
Asp Lys Leu Leu Glu Leu Cys Asn Lys Pro Val Asp Gly Ser Ser Ser	
2220 2225 2230 2235	
aca tta agc atg agc act cat ttt aaa atg ctt aaa aag ctg gta gaa	6832
Thr Leu Ser Met Ser Thr His Phe Lys Met Leu Lys Lys Leu Val Glu	
2240 2245 2250	
gaa gca aca ttt agt gaa atc ctc att cct cta caa tca gtc atg ata	6880
Glu Ala Thr Phe Ser Glu Ile Leu Ile Pro Leu Gln Ser Val Met Ile	
2255 2260 2265	
cct aca ctt cca tca att ctg ggt acc cat gct aac cat gct agc cat	6928
Pro Thr Leu Pro Ser Ile Leu Gly Thr His Ala Asn His Ala Ser His	
2270 2275 2280	
gaa cca ttt cct gga cat tgg gcc tat att gca ggg ttt gat gat atg	6976
Glu Pro Phe Pro Gly His Trp Ala Tyr Ile Ala Gly Phe Asp Asp Met	
2285 2290 2295	
gtg gaa att ctt gct tct ctt cag aaa cca aag aag att tct tta aaa	7024
Val Glu Ile Leu Ala Ser Leu Gln Lys Pro Lys Lys Ile Ser Leu Lys	
2300 2305 2310 2315	
ggc tca gat gga aag ttc tac atc atg atg tgt aag cca aaa gat gac	7072
Gly Ser Asp Gly Lys Phe Tyr Ile Met Met Cys Lys Pro Lys Asp Asp	
2320 2325 2330	
ctg aga aag gat tgt aga cta atg gaa ttc aat tcc ttg att aat aag	7120
Leu Arg Lys Asp Cys Arg Leu Met Glu Phe Asn Ser Leu Ile Asn Lys	
2335 2340 2345	
tgc tta aga aaa gat gca gag tct cgt aga aga gaa ctt cat att cga	7168
Cys Leu Arg Lys Asp Ala Glu Ser Arg Arg Arg Glu Leu His Ile Arg	
2350 2355 2360	
aca tat gca gtt att cca cta aat gat gaa tgt ggg att att gaa tgg	7216
Thr Tyr Ala Val Ile Pro Leu Asn Asp Glu Cys Gly Ile Ile Glu Trp	
2365 2370 2375	
gtg aac aac act gct ggt ttg aga cct att ctg acc aaa cta tat aaa	7264
Val Asn Asn Thr Ala Gly Leu Arg Pro Ile Leu Thr Lys Leu Tyr Lys	
2380 2385 2390 2395	
gaa aag gga gtg tat atg aca gga aaa gaa ctt cgc cag tgt atg cta	7312
Glu Lys Gly Val Tyr Met Thr Gly Lys Glu Leu Arg Gln Cys Met Leu	
2400 2405 2410	

cca aag tca gca gct tta tct gaa aaa ctc aaa gta ttc cga gaa ttt 7360
Pro Lys Ser Ala Ala Leu Ser Glu Lys Leu Lys Val Phe Arg Glu Phe
2415 2420 2425

ctc ctg ccc agg cat cct cct att ttt cat gag tgg ttt ctg aga aca 7408
Leu Leu Pro Arg His Pro Pro Ile Phe His Glu Trp Phe Leu Arg Thr
2430 2435 2440

ttc cct gat cct aca tca tgg tac agt agt aga tca gct tac tgc cgt 7456
Phe Pro Asp Pro Thr Ser Trp Tyr Ser Ser Arg Ser Ala Tyr Cys Arg
2445 2450 2455

tcc act gca gta atg tca atg gtt ggt tat att ctg ggg ctt gga gac 7504
Ser Thr Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp
2460 2465 2470 2475

cgt cat ggt gaa aat att ctc ttt gat tct ttg act ggt gaa tgc gta 7552
Arg His Gly Glu Asn Ile Leu Phe Asp Ser Leu Thr Gly Glu Cys Val
2480 2485 2490

cat gta gat ttc aat tgt ctt ttc aat aag gga gaa acc ttt gaa gtt 7600
His Val Asp Phe Asn Cys Leu Phe Asn Lys Gly Glu Thr Phe Glu Val
2495 2500 2505

cca gaa att gtg cca ttt cgc ctg act cat aat atg gtt aat gga atg 7648
Pro Glu Ile Val Pro Phe Arg Leu Thr His Asn Met Val Asn Gly Met
2510 2515 2520

ggg cct atg gga aca gag ggt ctt ttt cga aga gca tgt gaa gtt aca 7696
Gly Pro Met Gly Thr Glu Gly Leu Phe Arg Arg Ala Cys Glu Val Thr
2525 2530 2535

atg agg ctg atg cgt gat cag cga gag cct tta atg agt gtc tta aag 7744
Met Arg Leu Met Arg Asp Gln Arg Glu Pro Leu Met Ser Val Leu Lys
2540 2545 2550 2555

act ttt cta cat gat cct ctt gtg gaa tgg agt aaa cca gtg aaa ggg 7792
Thr Phe Leu His Asp Pro Leu Val Glu Trp Ser Lys Pro Val Lys Gly
2560 2565 2570

cat tcc aaa gcg cca ctg aat gaa act gga gaa gtt gtc aat gaa aag 7840
His Ser Lys Ala Pro Leu Asn Glu Thr Gly Glu Val Val Asn Glu Lys
2575 2580 2585

gcc aag acc cat gtt ctt gac att gag cag cga cta caa ggt gta atc 7888
Ala Lys Thr His Val Leu Asp Ile Glu Gln Arg Leu Gln Gly Val Ile
2590 2595 2600

aag act cga aat aga gtg aca gga ctg ccg tta tct att gaa gga cat 7936
Lys Thr Arg Asn Arg Val Thr Gly Leu Pro Leu Ser Ile Glu Gly His
2605 2610 2615

gtg cat tac ctt ata caa gaa gct act gat gaa aac tta cta tgc cag 7984
Val His Tyr Leu Ile Gln Glu Ala Thr Asp Glu Asn Leu Leu Cys Gln
2620 2625 2630 2635

atg tat ctt ggt tgg act cca tat atg tgaaatgaaa ttatgtaaaa 8031
Met Tyr Leu Gly Trp Thr Pro Tyr Met
2640

gaatatgtta ataatactaaa agtaatgcac ttggtatgaa tctgtggttg tatctgttca 8091

attctaaagt acaacataaaa ttacgttct cagcaactgt tatttctctc tgatcattaa 8151

ttatatgttaa aataatatac attcagttat taagaaataa actgctttct taataaaaaa 8211
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 8239

<210> 2
 <211> 2644
 <212> PRT
 <213> Homo sapiens

<400> 2

Met Gly Glu His Gly Leu Glu Leu Ala Ser Met Ile Pro Ala Leu Arg
 1 5 10 15

Glu Leu Gly Ser Ala Thr Pro Glu Glu Tyr Asn Thr Val Val Gln Lys
 20 25 30

Pro Arg Gln Ile Leu Cys Gln Phe Ile Asp Arg Ile Leu Thr Asp Val
 35 40 45

Asn Val Val Ala Val Glu Leu Val Lys Lys Thr Asp Ser Gln Pro Thr
 50 55 60

Ser Val Met Leu Leu Asp Phe Ile Gln His Ile Met Lys Ser Ser Pro
 65 70 75 80

Leu Met Phe Val Asn Val Ser Gly Ser His Glu Arg Lys Gly Ser Cys
 85 90 95

Ile Glu Phe Ser Asn Trp Ile Ile Thr Arg Leu Leu Arg Ile Ala Ala
 100 105 110

Thr Pro Ser Cys His Leu Leu His Lys Lys Ile Cys Glu Val Ile Cys
 115 120 125

Ser Leu Leu Phe Leu Phe Lys Ser Lys Ser Pro Ala Ile Phe Gly Val
 130 135 140

Leu Thr Lys Glu Leu Leu Gln Leu Phe Glu Asp Leu Val Tyr Leu His
 145 150 155 160

Arg Arg Asn Val Met Gly His Ala Val Glu Trp Pro Val Val Met Ser
 165 170 175

Arg Phe Leu Ser Gln Leu Asp Glu His Met Gly Tyr Leu Gln Ser Ala
 180 185 190

Pro Leu Gln Leu Met Ser Met Gln Asn Leu Glu Phe Ile Glu Val Thr
 195 200 205

Leu Leu Met Val Leu Thr Arg Ile Ile Ala Ile Val Phe Phe Arg Arg
210 215 220

Gln Glu Leu Leu Leu Trp Gln Ile Gly Cys Val Leu Leu Glu Tyr Gly
225 230 235 240

Ser Pro Lys Ile Lys Ser Leu Ala Ile Ser Phe Leu Thr Glu Leu Phe
245 250 255

Gln Leu Gly Gly Leu Pro Ala Gln Pro Ala Ser Thr Phe Phe Ser Ser
260 265 270

Phe Leu Glu Leu Leu Lys His Leu Val Glu Met Asp Thr Asp Gln Leu
275 280 285

Lys Leu Tyr Glu Glu Pro Leu Ser Lys Leu Ile Lys Thr Leu Phe Pro
290 295 300

Phe Glu Ala Glu Ala Tyr Arg Asn Ile Glu Pro Val Tyr Leu Asn Met
305 310 315 320

Leu Leu Glu Lys Leu Cys Val Met Phe Glu Asp Gly Val Leu Met Arg
325 330 335

Leu Lys Ser Asp Leu Leu Lys Ala Ala Leu Cys His Leu Leu Gln Tyr
340 345 350

Phe Leu Lys Phe Val Pro Ala Gly Tyr Glu Ser Ala Leu Gln Val Arg
355 360 365

Lys Val Tyr Val Arg Asn Ile Cys Lys Ala Leu Leu Asp Val Leu Gly
370 375 380

Ile Glu Val Asp Ala Glu Tyr Leu Leu Gly Pro Leu Tyr Ala Ala Leu
385 390 395 400

Lys Met Glu Ser Met Glu Ile Ile Glu Glu Ile Gln Cys Gln Thr Gln
405 410 415

Gln Glu Asn Leu Ser Ser Asn Ser Asp Gly Ile Ser Pro Lys Arg Arg
420 425 430

Arg Leu Ser Ser Ser Leu Asn Pro Ser Lys Arg Ala Pro Lys Gln Thr
435 440 445

Glu Glu Ile Lys His Val Asp Met Asn Gln Lys Ser Ile Leu Trp Ser
450 455 460

Ala Leu Lys Gln Lys Ala Glu Ser Leu Gln Ile Ser Leu Glu Tyr Ser
465 470 475 480

Gly Leu Lys Asn Pro Val Ile Glu Met Leu Glu Gly Ile Ala Val Val
485 490 495

Leu Gln Leu Thr Ala Leu Cys Thr Val His Cys Ser His Gln Asn Met
500 505 510

Asn Cys Arg Thr Phe Lys Asp Cys Gln His Lys Ser Lys Lys Lys Pro
515 520 525

Ser Val Val Ile Thr Trp Met Ser Leu Asp Phe Tyr Thr Lys Val Leu
530 535 540

Lys Ser Cys Arg Ser Leu Leu Glu Ser Val Gln Lys Leu Asp Leu Glu
545 550 555 560

Ala Thr Ile Asp Lys Val Val Lys Ile Tyr Asp Ala Leu Ile Tyr Met
565 570 575

Gln Val Asn Ser Ser Phe Glu Asp His Ile Leu Glu Asp Leu Cys Gly
580 585 590

Met Leu Ser Leu Pro Trp Ile Tyr Ser His Ser Asp Asp Gly Cys Leu
595 600 605

Lys Leu Thr Thr Phe Ala Ala Asn Leu Leu Thr Leu Ser Cys Arg Ile
610 615 620

Ser Asp Ser Tyr Ser Pro Gln Ala Gln Ser Arg Cys Val Phe Leu Leu
625 630 635 640

Thr Leu Phe Pro Arg Arg Ile Phe Leu Glu Trp Arg Thr Ala Val Tyr
645 650 655

Asn Trp Ala Leu Gln Ser Ser His Glu Val Ile Arg Ala Ser Cys Val
660 665 670

Ser Gly Phe Phe Ile Leu Leu Gln Gln Gln Asn Ser Cys Asn Arg Val
675 680 685

Pro Lys Ile Leu Ile Asp Lys Val Lys Asp Asp Ser Asp Ile Val Lys
690 695 700

Lys Glu Phe Ala Ser Ile Leu Gly Gln Leu Val Cys Thr Leu His Gly
705 710 715 720

Met Phe Tyr Leu Thr Ser Ser Leu Thr Glu Pro Phe Ser Glu His Gly
725 730 735

His Val Asp Leu Phe Cys Arg Asn Leu Lys Ala Thr Ser Gln His Glu
740 745 750

Cys Ser Ser Ser Gln Leu Lys Ala Ser Val Cys Lys Pro Phe Leu Phe
755 760 765

Leu Leu Lys Lys Lys Ile Pro Ser Pro Val Lys Leu Ala Phe Ile Asp
770 775 780

Asn Leu His His Leu Cys Lys His Leu Asp Phe Arg Glu Asp Glu Thr
785 790 795 800

Asp Val Lys Ala Val Leu Gly Thr Leu Leu Asn Leu Met Glu Asp Pro
805 810 815

Asp Lys Asp Val Arg Val Ala Phe Ser Gly Asn Ile Lys His Ile Leu
820 825 830

Glu Ser Leu Asp Ser Glu Asp Gly Phe Ile Lys Glu Leu Phe Val Leu
835 840 845

Arg Met Lys Glu Ala Tyr Thr His Ala Gln Ile Ser Arg Asn Asn Glu
850 855 860

Leu Lys Asp Thr Leu Ile Leu Thr Thr Gly Asp Ile Gly Arg Ala Ala
865 870 875 880

Lys Gly Asp Leu Val Pro Phe Ala Leu Leu His Leu Leu His Cys Leu
885 890 895

Leu Ser Lys Ser Ala Ser Val Ser Gly Ala Ala Tyr Thr Glu Ile Arg
900 905 910

Ala Leu Val Ala Ala Lys Ser Val Lys Leu Gln Ser Phe Phe Ser Gln
915 920 925

Tyr Lys Lys Pro Ile Cys Gln Phe Leu Val Glu Ser Leu His Ser Ser
930 935 940

Gln Met Thr Ala Leu Pro Asn Thr Pro Cys Gln Asn Ala Asp Val Arg
945 950 955 960

Lys Gln Asp Val Ala His Gln Arg Glu Met Ala Leu Asn Thr Leu Ser
965 970 975

Glu Ile Ala Asn Val Phe Asp Phe Pro Asp Leu Asn Arg Phe Leu Thr
 980 985 990

Arg Thr Leu Gln Val Leu Leu Pro Asp Leu Ala Ala Lys Ala Ser Pro
 995 1000 1005

Ala Ala Ser Ala Leu Ile Arg Thr Leu Gly Lys Gln Leu Asn Val
 1010 1015 1020

Asn Arg Arg Glu Ile Leu Ile Asn Asn Phe Lys Tyr Ile Phe Ser
 1025 1030 1035

His Leu Val Cys Ser Cys Ser Lys Asp Glu Leu Glu Arg Ala Leu
 1040 1045 1050

His Tyr Leu Lys Asn Glu Thr Glu Ile Glu Leu Gly Ser Leu Leu
 1055 1060 1065

Arg Gln Asp Phe Gln Gly Leu His Asn Glu Leu Leu Leu Arg Ile
 1070 1075 1080

Gly Glu His Tyr Gln Gln Val Phe Asn Gly Leu Ser Ile Leu Ala
 1085 1090 1095

Ser Phe Ala Ser Ser Asp Asp Pro Tyr Gln Gly Pro Arg Asp Ile
 1100 1105 1110

Ile Ser Pro Glu Leu Met Ala Asp Tyr Leu Gln Pro Lys Leu Leu
 1115 1120 1125

Gly Ile Leu Ala Phe Phe Asn Met Gln Leu Leu Ser Ser Ser Val
 1130 1135 1140

Gly Ile Glu Asp Lys Lys Met Ala Leu Asn Ser Leu Met Ser Leu
 1145 1150 1155

Met Lys Leu Met Gly Pro Lys His Val Ser Ser Val Arg Val Lys
 1160 1165 1170

Met Met Thr Thr Leu Arg Thr Gly Leu Arg Phe Lys Asp Asp Phe
 1175 1180 1185

Pro Glu Leu Cys Cys Arg Ala Trp Asp Cys Phe Val Arg Cys Leu
 1190 1195 1200

Asp His Ala Cys Leu Gly Ser Leu Leu Ser His Val Ile Val Ala
 1205 1210 1215

Leu	Leu	Pro	Leu	Ile	His	Ile	Gln	Pro	Lys	Glu	Thr	Ala	Ala	Ile
1220						1225					1230			
Phe	His	Tyr	Leu	Ile	Ile	Glu	Asn	Arg	Asp	Ala	Val	Gln	Asp	Phe
1235						1240					1245			
Leu	His	Glu	Ile	Tyr	Phe	Leu	Pro	Asp	His	Pro	Glu	Leu	Lys	Lys
1250						1255					1260			
Ile	Lys	Ala	Val	Leu	Gln	Glu	Tyr	Arg	Lys	Glu	Thr	Ser	Glu	Ser
1265						1270					1275			
Thr	Asp	Leu	Gln	Thr	Thr	Leu	Gln	Leu	Ser	Met	Lys	Ala	Ile	Gln
1280						1285					1290			
His	Glu	Asn	Val	Asp	Val	Arg	Ile	His	Ala	Leu	Thr	Ser	Leu	Lys
1295						1300					1305			
Glu	Thr	Leu	Tyr	Lys	Asn	Gln	Glu	Lys	Leu	Ile	Lys	Tyr	Ala	Thr
1310						1315					1320			
Asp	Ser	Glu	Thr	Val	Glu	Pro	Ile	Ile	Ser	Gln	Leu	Val	Thr	Val
1325						1330					1335			
Leu	Leu	Lys	Gly	Cys	Gln	Asp	Ala	Asn	Ser	Gln	Ala	Arg	Leu	Leu
1340						1345					1350			
Cys	Gly	Glu	Cys	Leu	Gly	Glu	Leu	Gly	Ala	Ile	Asp	Pro	Gly	Arg
1355						1360					1365			
Leu	Asp	Phe	Ser	Thr	Thr	Glu	Thr	Gln	Gly	Lys	Asp	Phe	Thr	Phe
1370						1375					1380			
Val	Thr	Gly	Val	Glu	Asp	Ser	Ser	Phe	Ala	Tyr	Gly	Leu	Leu	Met
1385						1390					1395			
Glu	Leu	Thr	Arg	Ala	Tyr	Leu	Ala	Tyr	Ala	Asp	Asn	Ser	Arg	Ala
1400						1405					1410			
Gln	Asp	Ser	Ala	Ala	Tyr	Ala	Ile	Gln	Glu	Leu	Leu	Ser	Ile	Tyr
1415						1420					1425			
Asp	Cys	Arg	Glu	Met	Glu	Thr	Asn	Gly	Pro	Gly	His	Gln	Leu	Trp
1430						1435					1440			
Arg	Arg	Phe	Pro	Glu	His	Val	Arg	Glu	Ile	Leu	Glu	Pro	His	Leu
1445						1450					1455			

Asn Thr	Arg Tyr Lys Ser Ser	Gln Lys Ser Thr Asp	Trp Ser Gly
1460	1465	1470	
Val Lys	Lys Pro Ile Tyr Leu	Ser Lys Leu Gly Ser	Asn Phe Ala
1475	1480	1485	
Glu Trp	Ser Ala Ser Trp Ala	Gly Tyr Leu Ile Thr	Lys Val Arg
1490	1495	1500	
His Asp	Leu Ala Ser Lys Ile	Phe Thr Cys Cys Ser	Ile Met Met
1505	1510	1515	
Lys His	Asp Phe Lys Val Thr	Ile Tyr Leu Leu Pro	His Ile Leu
1520	1525	1530	
Val Tyr	Val Leu Leu Gly Cys	Asn Gln Glu Asp Gln	Gln Glu Val
1535	1540	1545	
Tyr Ala	Glu Ile Met Ala Val	Leu Lys His Asp Asp	Gln His Thr
1550	1555	1560	
Ile Asn	Thr Gln Asp Ile Ala	Ser Asp Leu Cys Gln	Leu Ser Thr
1565	1570	1575	
Gln Thr	Val Phe Ser Met Leu	Asp His Leu Thr Gln	Trp Ala Arg
1580	1585	1590	
His Lys	Phe Gln Ala Leu Lys	Ala Glu Lys Cys Pro	His Ser Lys
1595	1600	1605	
Ser Asn	Arg Asn Lys Val Asp	Ser Met Val Ser Thr	Val Asp Tyr
1610	1615	1620	
Glu Asp	Tyr Gln Ser Val Thr	Arg Phe Leu Asp Leu	Ile Pro Gln
1625	1630	1635	
Asp Thr	Leu Ala Val Ala Ser	Phe Arg Ser Lys Ala	Tyr Thr Arg
1640	1645	1650	
Ala Val	Met His Phe Glu Ser	Phe Ile Thr Glu Lys	Lys Gln Asn
1655	1660	1665	
Ile Gln	Glu His Leu Gly Phe	Leu Gln Lys Leu Tyr	Ala Ala Met
1670	1675	1680	
His Glu	Pro Asp Gly Val Ala	Gly Val Ser Ala Ile	Arg Lys Ala
1685	1690	1695	

Glu	Pro	Ser	Leu	Lys	Glu	Gln	Ile	Leu	Glu	His	Glu	Ser	Leu	Gly
1700						1705					1710			
Leu	Leu	Arg	Asp	Ala	Thr	Ala	Cys	Tyr	Asp	Arg	Ala	Ile	Gln	Leu
1715						1720					1725			
Glu	Pro	Asp	Gln	Ile	Ile	His	Tyr	His	Gly	Val	Val	Lys	Ser	Met
1730						1735					1740			
Leu	Gly	Leu	Gly	Gln	Leu	Ser	Thr	Val	Ile	Thr	Gln	Val	Asn	Gly
1745						1750					1755			
Val	His	Ala	Asn	Arg	Ser	Glu	Trp	Thr	Asp	Glu	Leu	Asn	Thr	Tyr
1760						1765					1770			
Arg	Val	Glu	Ala	Ala	Trp	Lys	Leu	Ser	Gln	Trp	Asp	Leu	Val	Glu
1775						1780					1785			
Asn	Tyr	Leu	Ala	Ala	Asp	Gly	Lys	Ser	Thr	Thr	Trp	Ser	Val	Arg
1790						1795					1800			
Leu	Gly	Gln	Leu	Leu	Leu	Ser	Ala	Lys	Lys	Arg	Asp	Ile	Thr	Ala
1805						1810					1815			
Phe	Tyr	Asp	Ser	Leu	Lys	Leu	Val	Arg	Ala	Glu	Gln	Ile	Val	Pro
1820						1825					1830			
Leu	Ser	Ala	Ala	Ser	Phe	Glu	Arg	Gly	Ser	Tyr	Gln	Arg	Gly	Tyr
1835						1840					1845			
Glu	Tyr	Ile	Val	Arg	Leu	His	Met	Leu	Cys	Glu	Leu	Glu	His	Ser
1850						1855					1860			
Ile	Lys	Pro	Leu	Phe	Gln	His	Ser	Pro	Gly	Asp	Ser	Ser	Gln	Glu
1865						1870					1875			
Asp	Ser	Leu	Asn	Trp	Val	Ala	Arg	Leu	Glu	Met	Thr	Gln	Asn	Ser
1880						1885					1890			
Tyr	Arg	Ala	Lys	Asp	Pro	Ile	Leu	Ala	Leu	Arg	Arg	Ala	Leu	Leu
1895						1900					1905			
Ser	Leu	Asn	Lys	Arg	Pro	Asp	Tyr	Asn	Glu	Met	Val	Gly	Glu	Cys
1910						1915					1920			
Trp	Leu	Gln	Ser	Ala	Arg	Val	Ala	Arg	Lys	Ala	Gly	His	His	Gln
1925						1930					1935			

Thr	Ala	Tyr	Asn	Ala	Leu	Leu	Asn	Ala	Gly	Glu	Ser	Arg	Leu	Ala
1940						1945					1950			
Glu	Leu	Tyr	Val	Glu	Arg	Ala	Lys	Trp	Leu	Trp	Ser	Lys	Gly	Asp
1955						1960					1965			
Val	His	Gln	Ala	Leu	Ile	Val	Leu	Gln	Lys	Gly	Val	Glu	Leu	Cys
1970						1975					1980			
Phe	Pro	Glu	Asn	Glu	Thr	Pro	Pro	Glu	Gly	Lys	Asn	Met	Leu	Ile
1985						1990					1995			
His	Gly	Arg	Ala	Met	Leu	Leu	Val	Gly	Arg	Phe	Met	Glu	Glu	Thr
2000						2005					2010			
Ala	Asn	Phe	Glu	Ser	Asn	Ala	Ile	Met	Lys	Lys	Tyr	Lys	Asp	Val
2015						2020					2025			
Thr	Ala	Cys	Leu	Pro	Glu	Trp	Glu	Asp	Gly	His	Phe	Tyr	Leu	Ala
2030						2035					2040			
Lys	Tyr	Tyr	Asp	Lys	Leu	Met	Pro	Met	Val	Thr	Asp	Asn	Lys	Met
2045						2050					2055			
Glu	Lys	Gln	Gly	Asp	Leu	Ile	Arg	Tyr	Ile	Val	Leu	His	Phe	Gly
2060						2065					2070			
Arg	Ser	Leu	Gln	Tyr	Gly	Asn	Gln	Phe	Ile	Tyr	Gln	Ser	Met	Pro
2075						2080					2085			
Arg	Met	Leu	Thr	Leu	Trp	Leu	Asp	Tyr	Gly	Thr	Lys	Ala	Tyr	Glu
2090						2095					2100			
Trp	Glu	Lys	Ala	Gly	Arg	Ser	Asp	Arg	Val	Gln	Met	Arg	Asn	Asp
2105						2110					2115			
Leu	Gly	Lys	Ile	Asn	Lys	Val	Ile	Thr	Glu	His	Thr	Asn	Tyr	Leu
2120						2125					2130			
Ala	Pro	Tyr	Gln	Phe	Leu	Thr	Ala	Phe	Ser	Gln	Leu	Ile	Ser	Arg
2135						2140					2145			
Ile	Cys	His	Ser	His	Asp	Glu	Val	Phe	Val	Val	Leu	Met	Glu	Ile
2150						2155					2160			
Ile	Ala	Lys	Val	Phe	Leu	Ala	Tyr	Pro	Gln	Gln	Ala	Met	Trp	Met
2165						2170					2175			

Met	Thr	Ala	Val	Ser	Lys	Ser	Ser	Tyr	Pro	Met	Arg	Val	Asn	Arg
2180						2185					2190			
Cys	Lys	Glu	Ile	Leu	Asn	Lys	Ala	Ile	His	Met	Lys	Lys	Ser	Leu
2195						2200					2205			
Glu	Lys	Phe	Val	Gly	Asp	Ala	Thr	Arg	Leu	Thr	Asp	Lys	Leu	Leu
2210						2215					2220			
Glu	Leu	Cys	Asn	Lys	Pro	Val	Asp	Gly	Ser	Ser	Ser	Thr	Leu	Ser
2225						2230					2235			
Met	Ser	Thr	His	Phe	Lys	Met	Leu	Lys	Lys	Leu	Val	Glu	Glu	Ala
2240						2245					2250			
Thr	Phe	Ser	Glu	Ile	Leu	Ile	Pro	Leu	Gln	Ser	Val	Met	Ile	Pro
2255						2260					2265			
Thr	Leu	Pro	Ser	Ile	Leu	Gly	Thr	His	Ala	Asn	His	Ala	Ser	His
2270						2275					2280			
Glu	Pro	Phe	Pro	Gly	His	Trp	Ala	Tyr	Ile	Ala	Gly	Phe	Asp	Asp
2285						2290					2295			
Met	Val	Glu	Ile	Leu	Ala	Ser	Leu	Gln	Lys	Pro	Lys	Lys	Ile	Ser
2300						2305					2310			
Leu	Lys	Gly	Ser	Asp	Gly	Lys	Phe	Tyr	Ile	Met	Met	Cys	Lys	Pro
2315						2320					2325			
Lys	Asp	Asp	Leu	Arg	Lys	Asp	Cys	Arg	Leu	Met	Glu	Phe	Asn	Ser
2330						2335					2340			
Leu	Ile	Asn	Lys	Cys	Leu	Arg	Lys	Asp	Ala	Glu	Ser	Arg	Arg	Arg
2345						2350					2355			
Glu	Leu	His	Ile	Arg	Thr	Tyr	Ala	Val	Ile	Pro	Leu	Asn	Asp	Glu
2360						2365					2370			
Cys	Gly	Ile	Ile	Glu	Trp	Val	Asn	Asn	Thr	Ala	Gly	Leu	Arg	Pro
2375						2380					2385			
Ile	Leu	Thr	Lys	Leu	Tyr	Lys	Glu	Lys	Gly	Val	Tyr	Met	Thr	Gly
2390						2395					2400			
Lys	Glu	Leu	Arg	Gln	Cys	Met	Leu	Pro	Lys	Ser	Ala	Ala	Leu	Ser
2405						2410					2415			

Glu Lys	Leu Lys Val Phe Arg	Glu Phe Leu Leu Pro	Arg His Pro
2420	2425	2430	
Pro Ile	Phe His Glu Trp Phe	Leu Arg Thr Phe Pro	Asp Pro Thr
2435	2440	2445	
Ser Trp	Tyr Ser Ser Arg Ser	Ala Tyr Cys Arg Ser	Thr Ala Val
2450	2455	2460	
Met Ser	Met Val Gly Tyr Ile	Leu Gly Leu Gly Asp	Arg His Gly
2465	2470	2475	
Glu Asn	Ile Leu Phe Asp Ser	Leu Thr Gly Glu Cys	Val His Val
2480	2485	2490	
Asp Phe	Asn Cys Leu Phe Asn	Lys Gly Glu Thr Phe	Glu Val Pro
2495	2500	2505	
Glu Ile	Val Pro Phe Arg Leu	Thr His Asn Met Val	Asn Gly Met
2510	2515	2520	
Gly Pro	Met Gly Thr Glu Gly	Leu Phe Arg Arg Ala	Cys Glu Val
2525	2530	2535	
Thr Met	Arg Leu Met Arg Asp	Gln Arg Glu Pro Leu	Met Ser Val
2540	2545	2550	
Leu Lys	Thr Phe Leu His Asp	Pro Leu Val Glu Trp	Ser Lys Pro
2555	2560	2565	
Val Lys	Gly His Ser Lys Ala	Pro Leu Asn Glu Thr	Gly Glu Val
2570	2575	2580	
Val Asn	Glu Lys Ala Lys Thr	His Val Leu Asp Ile	Glu Gln Arg
2585	2590	2595	
Leu Gln	Gly Val Ile Lys Thr	Arg Asn Arg Val Thr	Gly Leu Pro
2600	2605	2610	
Leu Ser	Ile Glu Gly His Val	His Tyr Leu Ile Gln	Glu Ala Thr
2615	2620	2625	
Asp Glu	Asn Leu Leu Cys Gln	Met Tyr Leu Gly Trp	Thr Pro Tyr
2630	2635	2640	

Met

<210> 3
 <211> 8022
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (585)..(7742)
 <223>

<400> 3
 ggtaccaagt aaaaactgct tagtaagtat aaaacacaga agaatccgcg atctagttaa 60
 ccaatgccct gcgtatgacg ctccactgac gctatagtca atgagaacta ggatgtgcga 120
 ttataactta tcttttcaat attttcttat tattttattta agaaataatt gaattaaaac 180
 tcattttcttc ttttatttagc cgtaaaatag cttatttttct ctctactac ctttcaacaa 240
 taacttttttt ttttgtttat tgaccattat aatcacatca aaagtcaaaa aattcaatca 300
 ttatcagaaa catccagcct aatattactt aaaagttagt ttcctctgaa aattcagtat 360
 cacaaaagct cggttaattag catcgctcga tacttagtgc accatgcac ttcctttacc 420
 tcgtgagtgga aaatcgattt gataatcgat tgccactttt cgcataattc tattgagata 480
 ttttattact tacaatcgtc ttttataaat gctcaagact ttgaacgcgc gtgttgcggt 540
 ttaaaaaggc ctttttttga attgaatcaa tggtttgata tagt atg agc caa cac 596
 Met Ser Gln His
 1
 gca aaa agg aaa gct ggg tca ctc gat ctt tca ccc aga ggc tta gat 644
 Ala Lys Arg Lys Ala Gly Ser Leu Asp Leu Ser Pro Arg Gly Leu Asp
 5 10 15 20
 gac aga cag gct ttc gga cag ctt ttg aaa gaa gta tta gca tta gac 692
 Asp Arg Gln Ala Phe Gly Gln Leu Leu Lys Glu Val Leu Ala Leu Asp
 25 30 35
 aaa gaa cat gag tta ggt aga agt aat tct tta cca tct atg acc tcc 740
 Lys Glu His Glu Leu Gly Arg Ser Asn Ser Leu Pro Ser Met Thr Ser
 40 45 50
 gag ctt gtt gaa gtt tta att gaa gtt ggt ctt cta gct ttt aaa cat 788
 Glu Leu Val Glu Val Leu Ile Glu Val Gly Leu Leu Ala Phe Lys His
 55 60 65
 gat gat tca aaa tct gaa ttt atc tct cct aag atg cta aaa gaa gcc 836
 Asp Asp Ser Lys Ser Glu Phe Ile Ser Pro Lys Met Leu Lys Glu Ala
 70 75 80
 cat ctc tct cta caa gcg tta atg cta atc tta aaa agg tct ccg aca 884
 His Leu Ser Leu Gln Ala Leu Met Leu Ile Leu Lys Arg Ser Pro Thr
 85 90 95 100
 gtt ttg cgg gag att aaa tca tct gtt act ctt ttg gat tgg att tta 932
 Val Leu Arg Glu Ile Lys Ser Ser Val Thr Leu Leu Asp Trp Ile Leu

105										110					115					
ccc	agg	act	ata	tca	ttg	ttt	gct	gat	att	cgt	ttt	att	aag	tta	ttt		980			
Pro	Arg	Thr	Ile	Ser	Leu	Phe	Ala	Asp	Ile	Arg	Phe	Ile	Lys	Leu	Phe					
			120					125					130							
gac	tca	tta	aaa	gag	ttt	cat	aag	cta	att	tat	cag	cta	atc	agt	gaa		1028			
Asp	Ser	Leu	Lys	Glu	Phe	His	Lys	Leu	Ile	Tyr	Gln	Leu	Ile	Ser	Glu					
		135					140					145								
aag	tca	ttc	cta	tgg	gac	tta	tat	gct	tcg	ttt	atg	cgt	tat	tgg	aaa		1076			
Lys	Ser	Phe	Leu	Trp	Asp	Leu	Tyr	Ala	Ser	Phe	Met	Arg	Tyr	Trp	Lys					
	150					155					160									
tat	tat	att	aca	aac	gtt	tct	tct	ata	gtt	ctc	caa	atc	act	aat	gct		1124			
Tyr	Tyr	Ile	Thr	Asn	Val	Ser	Ser	Ile	Val	Leu	Gln	Ile	Thr	Asn	Ala					
165					170					175					180					
aca	ttc	cct	tac	aag	atg	ccc	tca	ccc	aat	tct	caa	cca	ttg	cag	agt		1172			
Thr	Phe	Pro	Tyr	Lys	Met	Pro	Ser	Pro	Asn	Ser	Gln	Pro	Leu	Gln	Ser					
				185					190					195						
atc	tcc	cca	aat	tat	cca	acc	cat	cga	gag	gac	aaa	ttt	gat	tta	ctt		1220			
Ile	Ser	Pro	Asn	Tyr	Pro	Thr	His	Arg	Glu	Asp	Lys	Phe	Asp	Leu	Leu					
			200					205					210							
atc	att	aat	ata	gag	gag	gct	tgt	aca	ttt	ttc	ttt	gaa	agt	gcc	cat		1268			
Ile	Ile	Asn	Ile	Glu	Glu	Ala	Cys	Thr	Phe	Phe	Phe	Glu	Ser	Ala	His					
		215					220					225								
ttt	ttt	gca	caa	tgc	tca	tat	tta	aag	aaa	tcc	aat	ttt	cct	agt	cca		1316			
Phe	Phe	Ala	Gln	Cys	Ser	Tyr	Leu	Lys	Lys	Ser	Asn	Phe	Pro	Ser	Pro					
	230					235					240									
cct	ctc	ttt	aca	gcg	tgg	act	tgg	atc	aag	cca	tgt	ttt	ttt	aat	ttt		1364			
Pro	Leu	Phe	Thr	Ala	Trp	Thr	Trp	Ile	Lys	Pro	Cys	Phe	Phe	Asn	Phe					
245				250					255					260						
gtt	att	tta	tta	aaa	cga	atc	agc	atc	gga	gac	tca	cag	ctc	ttt	cta		1412			
Val	Ile	Leu	Leu	Lys	Arg	Ile	Ser	Ile	Gly	Asp	Ser	Gln	Leu	Phe	Leu					
				265					270					275						
cat	ttg	cat	tca	cgt	ata	gtc	caa	act	tta	tgc	tgt	ttt	tcc	ttg	aat		1460			
His	Leu	His	Ser	Arg	Ile	Val	Gln	Thr	Leu	Cys	Cys	Phe	Ser	Leu	Asn					
			280				285						290							
ttt	ata	tat	cat	ggc	ctt	ccc	att	tgt	gaa	aaa	tct	aaa	cat	att	tta		1508			
Phe	Ile	Tyr	His	Gly	Leu	Pro	Ile	Cys	Glu	Lys	Ser	Lys	His	Ile	Leu					
	295					300						305								
atg	tcc	tcc	atc	aac	tta	aca	ttg	gga	tca	ttg	aag	aaa	act	tat	aca		1556			
Met	Ser	Ser	Ile	Asn	Leu	Thr	Leu	Gly	Ser	Leu	Lys	Lys	Thr	Tyr	Thr					
	310					315					320									
gtt	gct	aat	act	gct	ata	tct	ctt	ttt	ttt	ctc	tct	tta	ttt	gtt	tta		1604			
Val	Ala	Asn	Thr	Ala	Ile	Ser	Leu	Phe	Phe	Leu	Ser	Leu	Phe	Val	Leu					
325					330					335				340						
ccc	aaa	act	gta	gct	ggc	cta	ttc	tat	cct	ttt	ggg	gtt	tcc	tta	ctt		1652			
Pro	Lys	Thr	Val	Ala	Gly	Leu	Phe	Tyr	Pro	Phe	Gly	Val	Ser	Leu	Leu					
				345					350					355						
tct	gac	ttc	aag	gta	tta	gag	caa	ctt	gaa	cca	gat	tct	gat	ctc	aaa		1700			

Ser Asp Phe Lys Val Leu Glu Gln Leu Glu Pro Asp Ser Asp Leu Lys	
360 365 370	
aag gca ata ata tta ttt aag tgc aga tac caa agt tca gaa ata gat	1748
Lys Ala Ile Ile Leu Phe Lys Cys Arg Tyr Gln Ser Ser Glu Ile Asp	
375 380 385	
caa aca act ctc cgt gct ttt ggc gaa att tgt act ggt aaa ctt gaa	1796
Gln Thr Thr Leu Arg Ala Phe Gly Glu Ile Cys Thr Gly Lys Leu Glu	
390 395 400	
aac acg ttg ttt tct aac tct gaa tta aac ctt ttt ctt tta cat tat	1844
Asn Thr Leu Phe Ser Asn Ser Glu Leu Asn Leu Phe Leu Leu His Tyr	
405 410 415 420	
ctt tcc ttg gac aat gac ttg tca aat att ctt aaa gtg gat ttc cag	1892
Leu Ser Leu Asp Asn Asp Leu Ser Asn Ile Leu Lys Val Asp Phe Gln	
425 430 435	
aat ggt cat aac ata tgt aca ttt gca aaa tgg tgt ata aac aac aac	1940
Asn Gly His Asn Ile Cys Thr Phe Ala Lys Trp Cys Ile Asn Asn Asn	
440 445 450	
tta gat gaa ccg tct aat tta aag cac ttt cgt gaa atg tta gat tat	1988
Leu Asp Glu Pro Ser Asn Leu Lys His Phe Arg Glu Met Leu Asp Tyr	
455 460 465	
tat agc tct cat aat gtt aca ata agt gag gac gac ctg aag aac ttc	2036
Tyr Ser Ser His Asn Val Thr Ile Ser Glu Asp Asp Leu Lys Asn Phe	
470 475 480	
tct tta gtt ttg tgt act cat gtt gca aag gtg aat gag aaa aca aat	2084
Ser Leu Val Leu Cys Thr His Val Ala Lys Val Asn Glu Lys Thr Asn	
485 490 495 500	
agt att ttc cgc aca tat gaa gta cat ggt tgt gaa gtt tgt aac tca	2132
Ser Ile Phe Arg Thr Tyr Glu Val His Gly Cys Glu Val Cys Asn Ser	
505 510 515	
ttt tgt tta cta ttt gat gag cgg tcg cct ttt aaa att cct tat cac	2180
Phe Cys Leu Leu Phe Asp Glu Arg Ser Pro Phe Lys Ile Pro Tyr His	
520 525 530	
gaa ttg ttt tgt gca ttg cta aaa aat ccc gac ata att tcc tct tct	2228
Glu Leu Phe Cys Ala Leu Leu Lys Asn Pro Asp Ile Ile Ser Ser Ser	
535 540 545	
gtt aaa caa tca ttg ttg ctt gat ggc ttt ttt cgg tgg agc cag cat	2276
Val Lys Gln Ser Leu Leu Leu Asp Gly Phe Phe Arg Trp Ser Gln His	
550 555 560	
tgc tca aac ttt aat aaa gaa tca atg tta agt tta aga gaa ttt att	2324
Cys Ser Asn Phe Asn Lys Glu Ser Met Leu Ser Leu Arg Glu Phe Ile	
565 570 575 580	
atg aaa gca tta gcc agt act tca aga tgt tta cgt gtt gtt gct gca	2372
Met Lys Ala Leu Ala Ser Thr Ser Arg Cys Leu Arg Val Val Ala Ala	
585 590 595	
aaa gtt ttg ccc att ttc att aag gga cct aat aat ctt gat ata gtt	2420
Lys Val Leu Pro Ile Phe Ile Lys Gly Pro Asn Asn Leu Asp Ile Val	
600 605 610	

gaa ttt cac aag gaa agt aaa gcc ttg att ttt aat acg ttg aaa ata Glu Phe His Lys Glu Ser Lys Ala Leu Ile Phe Asn Thr Leu Lys Ile 615 620 625	2468
ttg gcg gtg gaa aat aca gct att tta gaa acg gtc att ctt tcc tgg Leu Ala Val Glu Asn Thr Ala Ile Leu Glu Thr Val Ile Leu Ser Trp 630 635 640	2516
atc tcc tta tct aga gtg gta gaa gaa gaa gaa tta cat ttt gta cta Ile Ser Leu Ser Arg Val Val Glu Glu Glu Glu Leu His Phe Val Leu 645 650 655 660	2564
ttg gaa gtt ata tct tct gtg ata aac agc gga ata ttt tat caa ggc Leu Glu Val Ile Ser Ser Val Ile Asn Ser Gly Ile Phe Tyr Gln Gly 665 670 675	2612
att ggt ctc agc gct ctg caa caa att gcc tcg acg cgt cat ata tcc Ile Gly Leu Ser Ala Leu Gln Gln Ile Ala Ser Thr Arg His Ile Ser 680 685 690	2660
gtt tgg caa tta ctt tct cca tat tgg cca aca gtg tcc gtt gcg att Val Trp Gln Leu Leu Ser Pro Tyr Trp Pro Thr Val Ser Val Ala Ile 695 700 705	2708
gtc caa ggt atg ggt aaa aaa ccg aac ata gcc agt tta ttt gct cag Val Gln Gly Met Gly Lys Lys Pro Asn Ile Ala Ser Leu Phe Ala Gln 710 715 720	2756
ctt atg aat att tcc gag ggc gat ttt ctt att cga aca cag gcg tac Leu Met Asn Ile Ser Glu Gly Asp Phe Leu Ile Arg Thr Gln Ala Tyr 725 730 735 740	2804
act tta cca ttc ctt gta ctt act aaa aac aaa gcg tta ata gta cgt Thr Leu Pro Phe Leu Val Leu Thr Lys Asn Lys Ala Leu Ile Val Arg 745 750 755	2852
ata gct gaa ctt tca caa agt gat gtt gct act ttg tgc ctt acc aat Ile Ala Glu Leu Ser Gln Ser Asp Val Ala Thr Leu Cys Leu Thr Asn 760 765 770	2900
atg cat aaa atc ctt gct tcg cta ctt act acg gat cat cct aat ttg Met His Lys Ile Leu Ala Ser Leu Leu Thr Thr Asp His Pro Asn Leu 775 780 785	2948
gaa gag agt gtg atg ctt ctt ctt tca ctg gcc act tct gat ttt gaa Glu Glu Ser Val Met Leu Leu Leu Ser Leu Ala Thr Ser Asp Phe Glu 790 795 800	2996
aaa gtt gat tta acg tct ttg tta cgc tct gat cct att tct att act Lys Val Asp Leu Thr Ser Leu Leu Arg Ser Asp Pro Ile Ser Ile Thr 805 810 815 820	3044
gtg gag ttg tta cag ctt tat cag aat gat gtt cct cat gaa aaa att Val Glu Leu Leu Gln Leu Tyr Gln Asn Asp Val Pro His Glu Lys Ile 825 830 835	3092
gaa aat gct tta aga aag gta gca atg att gtc tct caa gtg gtt aat Glu Asn Ala Leu Arg Lys Val Ala Met Ile Val Ser Gln Val Val Asn 840 845 850	3140
gac gaa gac ttg agc aat aag gaa tta ctt tat gat ttt ttt aat aat Asp Glu Asp Leu Ser Asn Lys Glu Leu Leu Tyr Asp Phe Phe Asn Asn 855 860 865	3188

cac att ttg ggt atc tta gca gaa ttt tct aat atc ctt aac gac ctg His Ile Leu Gly Ile Leu Ala Glu Phe Ser Asn Ile Leu Asn Asp Leu 870 875 880	3236
aaa gga aag act tca att aat gaa aag att aag aca att gtc ggc att Lys Gly Lys Thr Ser Ile Asn Glu Lys Ile Lys Thr Ile Val Gly Ile 885 890 895 900	3284
gaa aaa atg tta tct tta tgt gga ggt gca gtc aaa ctt gga tta cca Glu Lys Met Leu Ser Leu Cys Gly Gly Ala Val Lys Leu Gly Leu Pro 905 910 915	3332
cag ata ctt tct aat tta caa agt gct ttt caa aat gag cac tta agg Gln Ile Leu Ser Asn Leu Gln Ser Ala Phe Gln Asn Glu His Leu Arg 920 925 930	3380
ttt tat gca atc aaa gct tgg ttc agt ttg ata tta gca acc aag gag Phe Tyr Ala Ile Lys Ala Trp Phe Ser Leu Ile Leu Ala Thr Lys Glu 935 940 945	3428
ccc gag tat agt tca att gct ggt tta agt ctt gta att tta cct cct Pro Glu Tyr Ser Ser Ile Ala Gly Leu Ser Leu Val Ile Leu Pro Pro 950 955 960	3476
tta ttc cct tat tta gaa cca caa gaa gca gag cta gta att caa ata Leu Phe Pro Tyr Leu Glu Pro Gln Glu Ala Glu Leu Val Ile Gln Ile 965 970 975 980	3524
ttt gat ttt att tct tct gac aca cac aag tgc cta caa gga tta aag Phe Asp Phe Ile Ser Ser Asp Thr His Lys Cys Leu Gln Gly Leu Lys 985 990 995	3572
tgg gct atc ccc acc agt ctg gat tca gcg tgc ttt agc ctt aag Trp Ala Ile Pro Thr Ser Leu Asp Ser Ala Cys Phe Ser Leu Lys 1000 1005 1010	3617
gct aaa gaa ata ttc tgt tcg ctt caa aat gaa gat ttt tac tct Ala Lys Glu Ile Phe Cys Ser Leu Gln Asn Glu Asp Phe Tyr Ser 1015 1020 1025	3662
gag ctt caa agt ata att aag tgt tta act aac gaa aat gag cca Glu Leu Gln Ser Ile Ile Lys Cys Leu Thr Asn Glu Asn Glu Pro 1030 1035 1040	3707
gtt tgt tat tta ggt tta caa aaa tta gaa ctt ttt ttt caa gcc Val Cys Tyr Leu Gly Leu Gln Lys Leu Glu Leu Phe Phe Gln Ala 1045 1050 1055	3752
aag gtg gac gag tta cat gac aca cta aat ttg gac ata tcc aac Lys Val Asp Glu Leu His Asp Thr Leu Asn Leu Asp Ile Ser Asn 1060 1065 1070	3797
gaa gtt ctg gac caa tta cta aga tgc ctt tta gat tgt tgt gta Glu Val Leu Asp Gln Leu Leu Arg Cys Leu Leu Asp Cys Cys Val 1075 1080 1085	3842
aaa tat gct tca aca aat atg caa ata tca tat ctt gct gca aaa Lys Tyr Ala Ser Thr Asn Met Gln Ile Ser Tyr Leu Ala Ala Lys 1090 1095 1100	3887
aat ctt ggt gaa ttg ggt gcg ata gat ccc agc cgc gcc aag gct Asn Leu Gly Glu Leu Gly Ala Ile Asp Pro Ser Arg Ala Lys Ala 1105 1110 1115	3932

caa cat att att	aaa gaa aca gtt gtt	ctt gat aac ttt gaa aac	3977
Gln His Ile Ile	Lys Glu Thr Val Val	Leu Asp Asn Phe Glu Asn	
1120	1125	1130	
gga gaa gaa agt	ttg aag ttt att cta	gat ttt atg caa tcg cag	4022
Gly Glu Glu Ser	Leu Lys Phe Ile Leu	Asp Phe Met Gln Ser Gln	
1135	1140	1145	
tta att cca gct	ttc ctt gtt act act	gat act aaa gca caa ggt	4067
Leu Ile Pro Ala	Phe Leu Val Thr Thr	Asp Thr Lys Ala Gln Gly	
1150	1155	1160	
ttt ctt gcc tat	gct ctg caa gag ttt	cta aag ctt ggt gga ttc	4112
Phe Leu Ala Tyr	Ala Leu Gln Glu Phe	Leu Lys Leu Gly Gly Phe	
1165	1170	1175	
aag tcc gca gtg	att aat aaa aaa aag	gga cta act gtg gta aca	4157
Lys Ser Ala Val	Ile Asn Lys Lys Lys	Gly Leu Thr Val Val Thr	
1180	1185	1190	
gaa cat tgg atg	tct ttg cct gat tta	tcc aaa cgt gtg ctt ata	4202
Glu His Trp Met	Ser Leu Pro Asp Leu	Ser Lys Arg Val Leu Ile	
1195	1200	1205	
cca ttt tta act	tcc aag tat cat tta	aca cca atc ccc aaa att	4247
Pro Phe Leu Thr	Ser Lys Tyr His Leu	Thr Pro Ile Pro Lys Ile	
1210	1215	1220	
gac att cgg tac	cct att tat aaa gaa	aat gtt act att cat act	4292
Asp Ile Arg Tyr	Pro Ile Tyr Lys Glu	Asn Val Thr Ile His Thr	
1225	1230	1235	
tgg atg cag ttg	ttt tct ctt aaa ttg	atg gag tac gcc cat tcg	4337
Trp Met Gln Leu	Phe Ser Leu Lys Leu	Met Glu Tyr Ala His Ser	
1240	1245	1250	
caa aac gct gaa	aaa ata ttt ggt att	tgt tcg aaa gta gtg aaa	4382
Gln Asn Ala Glu	Lys Ile Phe Gly Ile	Cys Ser Lys Val Val Lys	
1255	1260	1265	
gac caa gag gtt	aac att ccc tgt ttt	ctt ctt ccc ttt ctt gtt	4427
Asp Gln Glu Val	Asn Ile Pro Cys Phe	Leu Leu Pro Phe Leu Val	
1270	1275	1280	
tta aat gtt att	tta acc gag tca gaa	ctg gaa gtt aat aaa gtc	4472
Leu Asn Val Ile	Leu Thr Glu Ser Glu	Leu Glu Val Asn Lys Val	
1285	1290	1295	
att gaa gaa ttc	cag ctt gtt att aat	caa ccg gga cct gat gga	4517
Ile Glu Glu Phe	Gln Leu Val Ile Asn	Gln Pro Gly Pro Asp Gly	
1300	1305	1310	
tta aat tcc gtg	ggg caa caa aga tac	acc tca ttt gta gat gta	4562
Leu Asn Ser Val	Gly Gln Gln Arg Tyr	Thr Ser Phe Val Asp Val	
1315	1320	1325	
ttt ttt aag att	gtg gat tac ctt aac	aaa tgg ctt cgc atg cga	4607
Phe Phe Lys Ile	Val Asp Tyr Leu Asn	Lys Trp Leu Arg Met Arg	
1330	1335	1340	
aag aag agg aat	tgg gat aga cgt tct	gcc att gca agg aaa gag	4652
Lys Lys Arg Asn	Trp Asp Arg Arg Ser	Ala Ile Ala Arg Lys Glu	
1345	1350	1355	

aac cgt tat atg tcg gtg gaa gat gct acc tct cga gaa tca tcg	4697
Asn Arg Tyr Met Ser Val Glu Asp Ala Thr Ser Arg Glu Ser Ser	
1360 1365 1370	
atc tca aaa gtt gag tca ttt ctt tct cga ttt cct tca aaa aca	4742
Ile Ser Lys Val Glu Ser Phe Leu Ser Arg Phe Pro Ser Lys Thr	
1375 1380 1385	
tta ggt att gtc tct tta aat tgt gga ttt cat gct cgt gca ttg	4787
Leu Gly Ile Val Ser Leu Asn Cys Gly Phe His Ala Arg Ala Leu	
1390 1395 1400	
ttt tat tgg gag caa cac ata cgt aat gct aca gct cca tat gca	4832
Phe Tyr Trp Glu Gln His Ile Arg Asn Ala Thr Ala Pro Tyr Ala	
1405 1410 1415	
gct tta gag tcc gat tat aga gtt ttg cag gaa ata tat gct gga	4877
Ala Leu Glu Ser Asp Tyr Arg Val Leu Gln Glu Ile Tyr Ala Gly	
1420 1425 1430	
att gat gat cca gat gaa atc gaa gca gtg tct tta aat ttc cat	4922
Ile Asp Asp Pro Asp Glu Ile Glu Ala Val Ser Leu Asn Phe His	
1435 1440 1445	
gat tac tcg ttt gat caa caa ctc ctt tta cat gaa aat tca gga	4967
Asp Tyr Ser Phe Asp Gln Gln Leu Leu Leu His Glu Asn Ser Gly	
1450 1455 1460	
aca tgg gac tcg gct ttg agt tgt tac gaa att att att caa aag	5012
Thr Trp Asp Ser Ala Leu Ser Cys Tyr Glu Ile Ile Ile Gln Lys	
1465 1470 1475	
gat cct gaa aat aaa aag gcg aaa atc ggt ttg ctt aac agc atg	5057
Asp Pro Glu Asn Lys Lys Ala Lys Ile Gly Leu Leu Asn Ser Met	
1480 1485 1490	
ctg caa tcg ggg cat tat gaa tct ctt gtt ttg agt tta gat tct	5102
Leu Gln Ser Gly His Tyr Glu Ser Leu Val Leu Ser Leu Asp Ser	
1495 1500 1505	
ttt ata atc aat gac aac cac gag tat tcg aag atg tta aat ttg	5147
Phe Ile Ile Asn Asp Asn His Glu Tyr Ser Lys Met Leu Asn Leu	
1510 1515 1520	
ggt att gaa gct tca tgg cgt tcg cta tct att gat tcg tta aaa	5192
Gly Ile Glu Ala Ser Trp Arg Ser Leu Ser Ile Asp Ser Leu Lys	
1525 1530 1535	
aag tgt ctt tca aaa agc aac ttg gaa tct ttc gaa gct aaa ttg	5237
Lys Cys Leu Ser Lys Ser Asn Leu Glu Ser Phe Glu Ala Lys Leu	
1540 1545 1550	
ggt agc ata ttt tac caa tac cta cgg aag gat tct ttt gct gaa	5282
Gly Ser Ile Phe Tyr Gln Tyr Leu Arg Lys Asp Ser Phe Ala Glu	
1555 1560 1565	
ttg acg gag cgg ctg caa ccc ttg tac gtt gat gct gct aca gca	5327
Leu Thr Glu Arg Leu Gln Pro Leu Tyr Val Asp Ala Ala Thr Ala	
1570 1575 1580	
att gca aac aca ggc gcc cat tca gcc tat gat tgt tat gat att	5372
Ile Ala Asn Thr Gly Ala His Ser Ala Tyr Asp Cys Tyr Asp Ile	
1585 1590 1595	

tta tct aag ctg	cac gca att aat gac	ttt agt agg att gct gaa	5417
Leu Ser Lys Leu	His Ala Ile Asn Asp	Phe Ser Arg Ile Ala Glu	
1600	1605	1610	
act gac gga att	gtt tcc gac aat ctt	gat att gtt ctt cgc cgt	5462
Thr Asp Gly Ile	Val Ser Asp Asn Leu	Asp Ile Val Leu Arg Arg	
1615	1620	1625	
cgg ctt agc caa	gta gct ccg tac ggt	aaa ttc aag cac caa atc	5507
Arg Leu Ser Gln	Val Ala Pro Tyr Gly	Lys Phe Lys His Gln Ile	
1630	1635	1640	
ctg tcc act cac	tta gtt ggc tat gaa	aaa ttt gaa aac acg aag	5552
Leu Ser Thr His	Leu Val Gly Tyr Glu	Lys Phe Glu Asn Thr Lys	
1645	1650	1655	
aaa act gct gaa	ata tat ctc gag att	gca aga ata tct cga aaa	5597
Lys Thr Ala Glu	Ile Tyr Leu Glu Ile	Ala Arg Ile Ser Arg Lys	
1660	1665	1670	
aat ggt caa ttt	caa aga gcc ttc aat	gcc atc ctc aaa gca atg	5642
Asn Gly Gln Phe	Gln Arg Ala Phe Asn	Ala Ile Leu Lys Ala Met	
1675	1680	1685	
gat tta gat aaa	ccg cta gca aca ata	gag cac gca caa tgg tgg	5687
Asp Leu Asp Lys	Pro Leu Ala Thr Ile	Glu His Ala Gln Trp Trp	
1690	1695	1700	
tgg cat caa ggg	caa cat cgt aaa gct	att tct gaa ttg aat ttt	5732
Trp His Gln Gly	Gln His Arg Lys Ala	Ile Ser Glu Leu Asn Phe	
1705	1710	1715	
tcg ctt aat aac	aac atg ttt gat ttg	gtt gat gag cat gaa gaa	5777
Ser Leu Asn Asn	Asn Met Phe Asp Leu	Val Asp Glu His Glu Glu	
1720	1725	1730	
aga cct aaa aat	cgt aaa gaa act tta	gga aat cca ctt aaa gga	5822
Arg Pro Lys Asn	Arg Lys Glu Thr Leu	Gly Asn Pro Leu Lys Gly	
1735	1740	1745	
aaa gtg ttc ttg	aaa ctt aca aaa tgg	ctc gga aaa gct ggc caa	5867
Lys Val Phe Leu	Lys Leu Thr Lys Trp	Leu Gly Lys Ala Gly Gln	
1750	1755	1760	
ctg gga ttg aag	gat ttg gag acg tat	tat cat aaa gcg gta gag	5912
Leu Gly Leu Lys	Asp Leu Glu Thr Tyr	Tyr His Lys Ala Val Glu	
1765	1770	1775	
att tac tca gaa	tgt gag aat acg cat	tat tat ctt ggc cat cat	5957
Ile Tyr Ser Glu	Cys Glu Asn Thr His	Tyr Tyr Leu Gly His His	
1780	1785	1790	
cga gtt tta atg	tat gaa gaa gaa caa	aag ctc cca gtt aat gaa	6002
Arg Val Leu Met	Tyr Glu Glu Glu Gln	Lys Leu Pro Val Asn Glu	
1795	1800	1805	
cag agc gaa cga	ttt tta agt ggt gag	tta gta act cgc ata att	6047
Gln Ser Glu Arg	Phe Leu Ser Gly Glu	Leu Val Thr Arg Ile Ile	
1810	1815	1820	
aac gaa ttt ggt	cga tct ttg tac tat	ggt aca aat cat ata tat	6092
Asn Glu Phe Gly	Arg Ser Leu Tyr Tyr	Gly Thr Asn His Ile Tyr	
1825	1830	1835	

gaa agt atg cca aaa ttg ctc aca ctg tgg ctt gat ttt ggg gcc	6137
Glu Ser Met Pro Lys Leu Leu Thr Leu Trp Leu Asp Phe Gly Ala	
1840 1845 1850	
gaa gaa ctt cgc tta tct aaa gat gac ggc gaa aag tac ttt cgt	6182
Glu Glu Leu Arg Leu Ser Lys Asp Asp Gly Glu Lys Tyr Phe Arg	
1855 1860 1865	
gaa cac att atc tct tcg aga aaa aaa tct ttg gaa ctt atg aat	6227
Glu His Ile Ile Ser Ser Arg Lys Lys Ser Leu Glu Leu Met Asn	
1870 1875 1880	
tcg aat gtt tgt cgc ctt tct atg aaa att cct caa tac ttt ttt	6272
Ser Asn Val Cys Arg Leu Ser Met Lys Ile Pro Gln Tyr Phe Phe	
1885 1890 1895	
ctg gtt gca tta tcc caa atg ata tcc aga gta tgc cat cca aat	6317
Leu Val Ala Leu Ser Gln Met Ile Ser Arg Val Cys His Pro Asn	
1900 1905 1910	
aat aaa gtt tat aaa att ttg gaa cat ata att gca aac gtt gta	6362
Asn Lys Val Tyr Lys Ile Leu Glu His Ile Ile Ala Asn Val Val	
1915 1920 1925	
gca tct tat cct ggg gag acg cta tgg caa tta atg gca aca ata	6407
Ala Ser Tyr Pro Gly Glu Thr Leu Trp Gln Leu Met Ala Thr Ile	
1930 1935 1940	
aaa tcg act tct caa aag cgc tcg ctt cgt gga aaa agc att tta	6452
Lys Ser Thr Ser Gln Lys Arg Ser Leu Arg Gly Lys Ser Ile Leu	
1945 1950 1955	
aat gtt tta cat tct agg aag ctt tct atg tct tcc aaa gtt gat	6497
Asn Val Leu His Ser Arg Lys Leu Ser Met Ser Ser Lys Val Asp	
1960 1965 1970	
ata aaa gca ctc agt caa tct gca att ctc att act gaa aag tta	6542
Ile Lys Ala Leu Ser Gln Ser Ala Ile Leu Ile Thr Glu Lys Leu	
1975 1980 1985	
atc aat ttg tgc aat aca agg att aac agt aaa tct gta aaa atg	6587
Ile Asn Leu Cys Asn Thr Arg Ile Asn Ser Lys Ser Val Lys Met	
1990 1995 2000	
agc tta aag gat cat ttt cgg ctt tct ttt gat gat ccg gta gat	6632
Ser Leu Lys Asp His Phe Arg Leu Ser Phe Asp Asp Pro Val Asp	
2005 2010 2015	
tta gtc att cct gct aaa tca ttt tta gac att act tta cca gct	6677
Leu Val Ile Pro Ala Lys Ser Phe Leu Asp Ile Thr Leu Pro Ala	
2020 2025 2030	
aaa gat gct aac aga gct agt cat tat cca ttt cca aaa act cag	6722
Lys Asp Ala Asn Arg Ala Ser His Tyr Pro Phe Pro Lys Thr Gln	
2035 2040 2045	
cct act ctg ttg aaa ttt gag gat gag gtg gat ata atg aac tct	6767
Pro Thr Leu Leu Lys Phe Glu Asp Glu Val Asp Ile Met Asn Ser	
2050 2055 2060	
ctt caa aaa cca aga aaa gtg tac gtt aga ggt acg gat ggc aac	6812
Leu Gln Lys Pro Arg Lys Val Tyr Val Arg Gly Thr Asp Gly Asn	
2065 2070 2075	

tta tac cca ttc	ttg tgc aaa ccc	aaa gat gat ctt cgt	aag gat	6857
Leu Tyr Pro Phe	Leu Cys Lys Pro	Lys Asp Asp Leu Arg	Lys Asp	
2080	2085	2090		
gct aga ttg atg	gaa ttt aat aat	ctt att tgt aaa ata	ttg agg	6902
Ala Arg Leu Met	Glu Phe Asn Asn	Leu Ile Cys Lys Ile	Leu Arg	
2095	2100	2105		
aaa gat caa gaa	gcg aac aga agg	aac ttg tgt att aga	act tat	6947
Lys Asp Gln Glu	Ala Asn Arg Arg	Asn Leu Cys Ile Arg	Thr Tyr	
2110	2115	2120		
gtt gtt att cct	tta aat gaa gaa	tgc gga ttt atc gaa	tgg gta	6992
Val Val Ile Pro	Leu Asn Glu Glu	Cys Gly Phe Ile Glu	Trp Val	
2125	2130	2135		
aat cat act cgt	cca ttt aga gaa	att ttg tta aaa agc	tat aga	7037
Asn His Thr Arg	Pro Phe Arg Glu	Ile Leu Leu Lys Ser	Tyr Arg	
2140	2145	2150		
cag aaa aac att	ccc ata tca tat	caa gaa atc aaa gtt	gat tta	7082
Gln Lys Asn Ile	Pro Ile Ser Tyr	Gln Glu Ile Lys Val	Asp Leu	
2155	2160	2165		
gac ttt gca ctg	cga agt cct aac	cct ggt gat ata ttt	gaa aag	7127
Asp Phe Ala Leu	Arg Ser Pro Asn	Pro Gly Asp Ile Phe	Glu Lys	
2170	2175	2180		
aaa atc tta ccg	aaa ttt cct cca	gtt ttt tat gag tgg	ttt gtt	7172
Lys Ile Leu Pro	Lys Phe Pro Pro	Val Phe Tyr Glu Trp	Phe Val	
2185	2190	2195		
gaa tct ttc cca	gaa cca aat aat	tgg gtt act agt aga	caa aac	7217
Glu Ser Phe Pro	Glu Pro Asn Asn	Trp Val Thr Ser Arg	Gln Asn	
2200	2205	2210		
tat tgc cga act	tta gca gta atg	tca ata gtt ggc tac	gtt ttg	7262
Tyr Cys Arg Thr	Leu Ala Val Met	Ser Ile Val Gly Tyr	Val Leu	
2215	2220	2225		
ggt ttg gga gat	cgc cat ggc gaa	aac ata ttg ttt gat	gaa ttt	7307
Gly Leu Gly Asp	Arg His Gly Glu	Asn Ile Leu Phe Asp	Glu Phe	
2230	2235	2240		
aca ggt gaa gct	atc cat gtc gat	ttc aac tgt ctt ttt	gat aaa	7352
Thr Gly Glu Ala	Ile His Val Asp	Phe Asn Cys Leu Phe	Asp Lys	
2245	2250	2255		
ggt ctt act ttt	gaa aaa cct gaa	aag gtg ccg ttc aga	tta act	7397
Gly Leu Thr Phe	Glu Lys Pro Glu	Lys Val Pro Phe Arg	Leu Thr	
2260	2265	2270		
cat aat atg gta	gat gca atg ggt	ccg aca ggt tat gaa	ggg ggt	7442
His Asn Met Val	Asp Ala Met Gly	Pro Thr Gly Tyr Glu	Gly Gly	
2275	2280	2285		
ttc agg aaa gct	agc gaa ata acg	atg cgg ctt ctt cgc	tca aac	7487
Phe Arg Lys Ala	Ser Glu Ile Thr	Met Arg Leu Leu Arg	Ser Asn	
2290	2295	2300		
caa gat aca ttg	atg agc gta cta	gag tct ttc cta cat	gat cct	7532
Gln Asp Thr Leu	Met Ser Val Leu	Glu Ser Phe Leu His	Asp Pro	
2305	2310	2315		

tta gtc gag tgg aat aga aag aag tcg tca agc aag tac ccg aat	7577
Leu Val Glu Trp Asn Arg Lys Lys Ser Ser Ser Lys Tyr Pro Asn	
2320 2325 2330	

aat gaa gca aat gaa gtt ttg gat ata att cgc aaa aaa ttt caa	7622
Asn Glu Ala Asn Glu Val Leu Asp Ile Ile Arg Lys Lys Phe Gln	
2335 2340 2345	

ggc ttt atg cca ggg gag acg ata cct tta tct att gaa ggg caa	7667
Gly Phe Met Pro Gly Glu Thr Ile Pro Leu Ser Ile Glu Gly Gln	
2350 2355 2360	

att caa gaa ttg atc aaa tct gct gtc aac cca aaa aac ctg gta	7712
Ile Gln Glu Leu Ile Lys Ser Ala Val Asn Pro Lys Asn Leu Val	
2365 2370 2375	

gaa atg tac att ggt tgg gct gct tat ttc tagcatttta ctaacaaaaa	7762
Glu Met Tyr Ile Gly Trp Ala Ala Tyr Phe	
2380 2385	

tttcaatgaa caagctaccc attattaaac ttatgatttg aatcgaagat attttattta	7822
---	------

ttaatccgat gaagaattct cgctgagttg ttcaatttct tgtaattttc cttccatttc	7882
---	------

taaatcgctg attcgcttaa atagggcact ggctttttgt gcatttttct ctcgtaaagc	7942
---	------

agctttctgat tgaaaaaaag ctatatctgt ttctgagtca tcatccgaat caacaatata	8002
--	------

ttttgcagat cgacctgcag	8022
-----------------------	------

<210> 4

<211> 2386

<212> PRT

<213> Homo sapiens

<400> 4

Met Ser Gln His Ala Lys Arg Lys Ala Gly Ser Leu Asp Leu Ser Pro
1 5 10 15

Arg Gly Leu Asp Asp Arg Gln Ala Phe Gly Gln Leu Leu Lys Glu Val
20 25 30

Leu Ala Leu Asp Lys Glu His Glu Leu Gly Arg Ser Asn Ser Leu Pro
35 40 45

Ser Met Thr Ser Glu Leu Val Glu Val Leu Ile Glu Val Gly Leu Leu
50 55 60

Ala Phe Lys His Asp Asp Ser Lys Ser Glu Phe Ile Ser Pro Lys Met
65 70 75 80

Leu Lys Glu Ala His Leu Ser Leu Gln Ala Leu Met Leu Ile Leu Lys
 85 90 95

Arg Ser Pro Thr Val Leu Arg Glu Ile Lys Ser Ser Val Thr Leu Leu
 100 105 110

Asp Trp Ile Leu Pro Arg Thr Ile Ser Leu Phe Ala Asp Ile Arg Phe
 115 120 125

Ile Lys Leu Phe Asp Ser Leu Lys Glu Phe His Lys Leu Ile Tyr Gln
 130 135 140

Leu Ile Ser Glu Lys Ser Phe Leu Trp Asp Leu Tyr Ala Ser Phe Met
 145 150 155 160

Arg Tyr Trp Lys Tyr Tyr Ile Thr Asn Val Ser Ser Ile Val Leu Gln
 165 170 175

Ile Thr Asn Ala Thr Phe Pro Tyr Lys Met Pro Ser Pro Asn Ser Gln
 180 185 190

Pro Leu Gln Ser Ile Ser Pro Asn Tyr Pro Thr His Arg Glu Asp Lys
 195 200 205

Phe Asp Leu Leu Ile Ile Asn Ile Glu Glu Ala Cys Thr Phe Phe Phe
 210 215 220

Glu Ser Ala His Phe Phe Ala Gln Cys Ser Tyr Leu Lys Lys Ser Asn
 225 230 235 240

Phe Pro Ser Pro Pro Leu Phe Thr Ala Trp Thr Trp Ile Lys Pro Cys
 245 250 255

Phe Phe Asn Phe Val Ile Leu Leu Lys Arg Ile Ser Ile Gly Asp Ser
 260 265 270

Gln Leu Phe Leu His Leu His Ser Arg Ile Val Gln Thr Leu Cys Cys
 275 280 285

Phe Ser Leu Asn Phe Ile Tyr His Gly Leu Pro Ile Cys Glu Lys Ser
 290 295 300

Lys His Ile Leu Met Ser Ser Ile Asn Leu Thr Leu Gly Ser Leu Lys
 305 310 315 320

Lys Thr Tyr Thr Val Ala Asn Thr Ala Ile Ser Leu Phe Phe Leu Ser
 325 330 335

Leu Phe Val Leu Pro Lys Thr Val Ala Gly Leu Phe Tyr Pro Phe Gly
 340 345 350

Val Ser Leu Leu Ser Asp Phe Lys Val Leu Glu Gln Leu Glu Pro Asp
 355 360 365

Ser Asp Leu Lys Lys Ala Ile Ile Leu Phe Lys Cys Arg Tyr Gln Ser
 370 375 380

Ser Glu Ile Asp Gln Thr Thr Leu Arg Ala Phe Gly Glu Ile Cys Thr
 385 390 395 400

Gly Lys Leu Glu Asn Thr Leu Phe Ser Asn Ser Glu Leu Asn Leu Phe
 405 410 415

Leu Leu His Tyr Leu Ser Leu Asp Asn Asp Leu Ser Asn Ile Leu Lys
 420 425 430

Val Asp Phe Gln Asn Gly His Asn Ile Cys Thr Phe Ala Lys Trp Cys
 435 440 445

Ile Asn Asn Asn Leu Asp Glu Pro Ser Asn Leu Lys His Phe Arg Glu
 450 455 460

Met Leu Asp Tyr Tyr Ser Ser His Asn Val Thr Ile Ser Glu Asp Asp
 465 470 475 480

Leu Lys Asn Phe Ser Leu Val Leu Cys Thr His Val Ala Lys Val Asn
 485 490 495

Glu Lys Thr Asn Ser Ile Phe Arg Thr Tyr Glu Val His Gly Cys Glu
 500 505 510

Val Cys Asn Ser Phe Cys Leu Leu Phe Asp Glu Arg Ser Pro Phe Lys
 515 520 525

Ile Pro Tyr His Glu Leu Phe Cys Ala Leu Leu Lys Asn Pro Asp Ile
 530 535 540

Ile Ser Ser Ser Val Lys Gln Ser Leu Leu Leu Asp Gly Phe Phe Arg
 545 550 555 560

Trp Ser Gln His Cys Ser Asn Phe Asn Lys Glu Ser Met Leu Ser Leu
 565 570 575

Arg Glu Phe Ile Met Lys Ala Leu Ala Ser Thr Ser Arg Cys Leu Arg
 580 585 590

Val Val Ala Ala Lys Val Leu Pro Ile Phe Ile Lys Gly Pro Asn Asn
595 600 605

Leu Asp Ile Val Glu Phe His Lys Glu Ser Lys Ala Leu Ile Phe Asn
610 615 620

Thr Leu Lys Ile Leu Ala Val Glu Asn Thr Ala Ile Leu Glu Thr Val
625 630 635 640

Ile Leu Ser Trp Ile Ser Leu Ser Arg Val Val Glu Glu Glu Glu Leu
645 650 655

His Phe Val Leu Leu Glu Val Ile Ser Ser Val Ile Asn Ser Gly Ile
660 665 670

Phe Tyr Gln Gly Ile Gly Leu Ser Ala Leu Gln Gln Ile Ala Ser Thr
675 680 685

Arg His Ile Ser Val Trp Gln Leu Leu Ser Pro Tyr Trp Pro Thr Val
690 695 700

Ser Val Ala Ile Val Gln Gly Met Gly Lys Lys Pro Asn Ile Ala Ser
705 710 715 720

Leu Phe Ala Gln Leu Met Asn Ile Ser Glu Gly Asp Phe Leu Ile Arg
725 730 735

Thr Gln Ala Tyr Thr Leu Pro Phe Leu Val Leu Thr Lys Asn Lys Ala
740 745 750

Leu Ile Val Arg Ile Ala Glu Leu Ser Gln Ser Asp Val Ala Thr Leu
755 760 765

Cys Leu Thr Asn Met His Lys Ile Leu Ala Ser Leu Leu Thr Thr Asp
770 775 780

His Pro Asn Leu Glu Glu Ser Val Met Leu Leu Leu Ser Leu Ala Thr
785 790 795 800

Ser Asp Phe Glu Lys Val Asp Leu Thr Ser Leu Leu Arg Ser Asp Pro
805 810 815

Ile Ser Ile Thr Val Glu Leu Leu Gln Leu Tyr Gln Asn Asp Val Pro
820 825 830

His Glu Lys Ile Glu Asn Ala Leu Arg Lys Val Ala Met Ile Val Ser
835 840 845

Gln Val Val Asn Asp Glu Asp Leu Ser Asn Lys Glu Leu Leu Tyr Asp
850 855 860

Phe Phe Asn Asn His Ile Leu Gly Ile Leu Ala Glu Phe Ser Asn Ile
865 870 875 880

Leu Asn Asp Leu Lys Gly Lys Thr Ser Ile Asn Glu Lys Ile Lys Thr
885 890 895

Ile Val Gly Ile Glu Lys Met Leu Ser Leu Cys Gly Gly Ala Val Lys
900 905 910

Leu Gly Leu Pro Gln Ile Leu Ser Asn Leu Gln Ser Ala Phe Gln Asn
915 920 925

Glu His Leu Arg Phe Tyr Ala Ile Lys Ala Trp Phe Ser Leu Ile Leu
930 935 940

Ala Thr Lys Glu Pro Glu Tyr Ser Ser Ile Ala Gly Leu Ser Leu Val
945 950 955 960

Ile Leu Pro Pro Leu Phe Pro Tyr Leu Glu Pro Gln Glu Ala Glu Leu
965 970 975

Val Ile Gln Ile Phe Asp Phe Ile Ser Ser Asp Thr His Lys Cys Leu
980 985 990

Gln Gly Leu Lys Trp Ala Ile Pro Thr Ser Leu Asp Ser Ala Cys Phe
995 1000 1005

Ser Leu Lys Ala Lys Glu Ile Phe Cys Ser Leu Gln Asn Glu Asp
1010 1015 1020

Phe Tyr Ser Glu Leu Gln Ser Ile Ile Lys Cys Leu Thr Asn Glu
1025 1030 1035

Asn Glu Pro Val Cys Tyr Leu Gly Leu Gln Lys Leu Glu Leu Phe
1040 1045 1050

Phe Gln Ala Lys Val Asp Glu Leu His Asp Thr Leu Asn Leu Asp
1055 1060 1065

Ile Ser Asn Glu Val Leu Asp Gln Leu Leu Arg Cys Leu Leu Asp
1070 1075 1080

Cys Cys Val Lys Tyr Ala Ser Thr Asn Met Gln Ile Ser Tyr Leu
1085 1090 1095

Ala Ala Lys Asn Leu Gly Glu Leu Gly Ala Ile Asp Pro Ser Arg
1100 1105 1110

Ala Lys Ala Gln His Ile Ile Lys Glu Thr Val Val Leu Asp Asn
1115 1120 1125

Phe Glu Asn Gly Glu Glu Ser Leu Lys Phe Ile Leu Asp Phe Met
1130 1135 1140

Gln Ser Gln Leu Ile Pro Ala Phe Leu Val Thr Thr Asp Thr Lys
1145 1150 1155

Ala Gln Gly Phe Leu Ala Tyr Ala Leu Gln Glu Phe Leu Lys Leu
1160 1165 1170

Gly Gly Phe Lys Ser Ala Val Ile Asn Lys Lys Lys Gly Leu Thr
1175 1180 1185

Val Val Thr Glu His Trp Met Ser Leu Pro Asp Leu Ser Lys Arg
1190 1195 1200

Val Leu Ile Pro Phe Leu Thr Ser Lys Tyr His Leu Thr Pro Ile
1205 1210 1215

Pro Lys Ile Asp Ile Arg Tyr Pro Ile Tyr Lys Glu Asn Val Thr
1220 1225 1230

Ile His Thr Trp Met Gln Leu Phe Ser Leu Lys Leu Met Glu Tyr
1235 1240 1245

Ala His Ser Gln Asn Ala Glu Lys Ile Phe Gly Ile Cys Ser Lys
1250 1255 1260

Val Val Lys Asp Gln Glu Val Asn Ile Pro Cys Phe Leu Leu Pro
1265 1270 1275

Phe Leu Val Leu Asn Val Ile Leu Thr Glu Ser Glu Leu Glu Val
1280 1285 1290

Asn Lys Val Ile Glu Glu Phe Gln Leu Val Ile Asn Gln Pro Gly
1295 1300 1305

Pro Asp Gly Leu Asn Ser Val Gly Gln Gln Arg Tyr Thr Ser Phe
1310 1315 1320

Val Asp Val Phe Phe Lys Ile Val Asp Tyr Leu Asn Lys Trp Leu
1325 1330 1335

Arg Met 1340	Arg Lys Lys Arg	Asn 1345	Trp Asp Arg Arg	Ser 1350	Ala Ile Ala
Arg Lys 1355	Glu Asn Arg Tyr	Met 1360	Ser Val Glu Asp	Ala 1365	Thr Ser Arg
Glu Ser 1370	Ser Ile Ser Lys	Val 1375	Glu Ser Phe Leu	Ser 1380	Arg Phe Pro
Ser Lys 1385	Thr Leu Gly Ile	Val 1390	Ser Leu Asn Cys	Gly 1395	Phe His Ala
Arg Ala 1400	Leu Phe Tyr Trp	Glu 1405	Gln His Ile Arg	Asn 1410	Ala Thr Ala
Pro Tyr 1415	Ala Ala Leu Glu	Ser 1420	Asp Tyr Arg Val	Leu 1425	Gln Glu Ile
Tyr Ala 1430	Gly Ile Asp Asp	Pro 1435	Asp Glu Ile Glu	Ala 1440	Val Ser Leu
Asn Phe 1445	His Asp Tyr Ser	Phe 1450	Asp Gln Gln Leu	Leu 1455	Leu His Glu
Asn Ser 1460	Gly Thr Trp Asp	Ser 1465	Ala Leu Ser Cys	Tyr 1470	Glu Ile Ile
Ile Gln 1475	Lys Asp Pro Glu	Asn 1480	Lys Lys Ala Lys	Ile 1485	Gly Leu Leu
Asn Ser 1490	Met Leu Gln Ser	Gly 1495	His Tyr Glu Ser	Leu 1500	Val Leu Ser
Leu Asp 1505	Ser Phe Ile Ile	Asn 1510	Asp Asn His Glu	Tyr 1515	Ser Lys Met
Leu Asn 1520	Leu Gly Ile Glu	Ala 1525	Ser Trp Arg Ser	Leu 1530	Ser Ile Asp
Ser Leu 1535	Lys Lys Cys Leu	Ser 1540	Lys Ser Asn Leu	Glu 1545	Ser Phe Glu
Ala Lys 1550	Leu Gly Ser Ile	Phe 1555	Tyr Gln Tyr Leu	Arg 1560	Lys Asp Ser
Phe Ala 1565	Glu Leu Thr Glu	Arg 1570	Leu Gln Pro Leu	Tyr 1575	Val Asp Ala

Ala Thr 1580	Ala Ile Ala Asn Thr 1585	Gly Ala His Ser 1590	Ala Tyr Asp Cys
Tyr Asp 1595	Ile Leu Ser Lys Leu 1600	His Ala Ile Asn Asp 1605	Phe Ser Arg
Ile Ala 1610	Glu Thr Asp Gly Ile 1615	Val Ser Asp Asn Leu 1620	Asp Ile Val
Leu Arg 1625	Arg Arg Leu Ser Gln 1630	Val Ala Pro Tyr Gly 1635	Lys Phe Lys
His Gln 1640	Ile Leu Ser Thr His 1645	Leu Val Gly Tyr Glu 1650	Lys Phe Glu
Asn Thr 1655	Lys Lys Thr Ala Glu 1660	Ile Tyr Leu Glu Ile 1665	Ala Arg Ile
Ser Arg 1670	Lys Asn Gly Gln Phe 1675	Gln Arg Ala Phe Asn 1680	Ala Ile Leu
Lys Ala 1685	Met Asp Leu Asp Lys 1690	Pro Leu Ala Thr Ile 1695	Glu His Ala
Gln Trp 1700	Trp Trp His Gln Gly 1705	Gln His Arg Lys Ala 1710	Ile Ser Glu
Leu Asn 1715	Phe Ser Leu Asn Asn 1720	Asn Met Phe Asp Leu 1725	Val Asp Glu
His Glu 1730	Glu Arg Pro Lys Asn 1735	Arg Lys Glu Thr Leu 1740	Gly Asn Pro
Leu Lys 1745	Gly Lys Val Phe Leu 1750	Lys Leu Thr Lys Trp 1755	Leu Gly Lys
Ala Gly 1760	Gln Leu Gly Leu Lys 1765	Asp Leu Glu Thr Tyr 1770	Tyr His Lys
Ala Val 1775	Glu Ile Tyr Ser Glu 1780	Cys Glu Asn Thr His 1785	Tyr Tyr Leu
Gly His 1790	His Arg Val Leu Met 1795	Tyr Glu Glu Glu Gln 1800	Lys Leu Pro
Val Asn 1805	Glu Gln Ser Glu Arg 1810	Phe Leu Ser Gly Glu 1815	Leu Val Thr

Arg	Ile	Ile	Asn	Glu	Phe	Gly	Arg	Ser	Leu	Tyr	Tyr	Gly	Thr	Asn
1820						1825					1830			
His	Ile	Tyr	Glu	Ser	Met	Pro	Lys	Leu	Leu	Thr	Leu	Trp	Leu	Asp
1835						1840					1845			
Phe	Gly	Ala	Glu	Glu	Leu	Arg	Leu	Ser	Lys	Asp	Asp	Gly	Glu	Lys
1850						1855					1860			
Tyr	Phe	Arg	Glu	His	Ile	Ile	Ser	Ser	Arg	Lys	Lys	Ser	Leu	Glu
1865						1870					1875			
Leu	Met	Asn	Ser	Asn	Val	Cys	Arg	Leu	Ser	Met	Lys	Ile	Pro	Gln
1880						1885					1890			
Tyr	Phe	Phe	Leu	Val	Ala	Leu	Ser	Gln	Met	Ile	Ser	Arg	Val	Cys
1895						1900					1905			
His	Pro	Asn	Asn	Lys	Val	Tyr	Lys	Ile	Leu	Glu	His	Ile	Ile	Ala
1910						1915					1920			
Asn	Val	Val	Ala	Ser	Tyr	Pro	Gly	Glu	Thr	Leu	Trp	Gln	Leu	Met
1925						1930					1935			
Ala	Thr	Ile	Lys	Ser	Thr	Ser	Gln	Lys	Arg	Ser	Leu	Arg	Gly	Lys
1940						1945					1950			
Ser	Ile	Leu	Asn	Val	Leu	His	Ser	Arg	Lys	Leu	Ser	Met	Ser	Ser
1955						1960					1965			
Lys	Val	Asp	Ile	Lys	Ala	Leu	Ser	Gln	Ser	Ala	Ile	Leu	Ile	Thr
1970						1975					1980			
Glu	Lys	Leu	Ile	Asn	Leu	Cys	Asn	Thr	Arg	Ile	Asn	Ser	Lys	Ser
1985						1990					1995			
Val	Lys	Met	Ser	Leu	Lys	Asp	His	Phe	Arg	Leu	Ser	Phe	Asp	Asp
2000						2005					2010			
Pro	Val	Asp	Leu	Val	Ile	Pro	Ala	Lys	Ser	Phe	Leu	Asp	Ile	Thr
2015						2020					2025			
Leu	Pro	Ala	Lys	Asp	Ala	Asn	Arg	Ala	Ser	His	Tyr	Pro	Phe	Pro
2030						2035					2040			
Lys	Thr	Gln	Pro	Thr	Leu	Leu	Lys	Phe	Glu	Asp	Glu	Val	Asp	Ile
2045						2050					2055			

Met	Asn	Ser	Leu	Gln	Lys	Pro	Arg	Lys	Val	Tyr	Val	Arg	Gly	Thr
2060						2065					2070			
Asp	Gly	Asn	Leu	Tyr	Pro	Phe	Leu	Cys	Lys	Pro	Lys	Asp	Asp	Leu
2075						2080					2085			
Arg	Lys	Asp	Ala	Arg	Leu	Met	Glu	Phe	Asn	Asn	Leu	Ile	Cys	Lys
2090						2095					2100			
Ile	Leu	Arg	Lys	Asp	Gln	Glu	Ala	Asn	Arg	Arg	Asn	Leu	Cys	Ile
2105						2110					2115			
Arg	Thr	Tyr	Val	Val	Ile	Pro	Leu	Asn	Glu	Glu	Cys	Gly	Phe	Ile
2120						2125					2130			
Glu	Trp	Val	Asn	His	Thr	Arg	Pro	Phe	Arg	Glu	Ile	Leu	Leu	Lys
2135						2140					2145			
Ser	Tyr	Arg	Gln	Lys	Asn	Ile	Pro	Ile	Ser	Tyr	Gln	Glu	Ile	Lys
2150						2155					2160			
Val	Asp	Leu	Asp	Phe	Ala	Leu	Arg	Ser	Pro	Asn	Pro	Gly	Asp	Ile
2165						2170					2175			
Phe	Glu	Lys	Lys	Ile	Leu	Pro	Lys	Phe	Pro	Pro	Val	Phe	Tyr	Glu
2180						2185					2190			
Trp	Phe	Val	Glu	Ser	Phe	Pro	Glu	Pro	Asn	Asn	Trp	Val	Thr	Ser
2195						2200					2205			
Arg	Gln	Asn	Tyr	Cys	Arg	Thr	Leu	Ala	Val	Met	Ser	Ile	Val	Gly
2210						2215					2220			
Tyr	Val	Leu	Gly	Leu	Gly	Asp	Arg	His	Gly	Glu	Asn	Ile	Leu	Phe
2225						2230					2235			
Asp	Glu	Phe	Thr	Gly	Glu	Ala	Ile	His	Val	Asp	Phe	Asn	Cys	Leu
2240						2245					2250			
Phe	Asp	Lys	Gly	Leu	Thr	Phe	Glu	Lys	Pro	Glu	Lys	Val	Pro	Phe
2255						2260					2265			
Arg	Leu	Thr	His	Asn	Met	Val	Asp	Ala	Met	Gly	Pro	Thr	Gly	Tyr
2270						2275					2280			
Glu	Gly	Gly	Phe	Arg	Lys	Ala	Ser	Glu	Ile	Thr	Met	Arg	Leu	Leu
2285						2290					2295			

Arg Ser Asn Gln Asp Thr Leu Met Ser Val Leu Glu Ser Phe Leu
2300 2305 2310

His Asp Pro Leu Val Glu Trp Asn Arg Lys Lys Ser Ser Ser Lys
2315 2320 2325

Tyr Pro Asn Asn Glu Ala Asn Glu Val Leu Asp Ile Ile Arg Lys
2330 2335 2340

Lys Phe Gln Gly Phe Met Pro Gly Glu Thr Ile Pro Leu Ser Ile
2345 2350 2355

Glu Gly Gln Ile Gln Glu Leu Ile Lys Ser Ala Val Asn Pro Lys
2360 2365 2370

Asn Leu Val Glu Met Tyr Ile Gly Trp Ala Ala Tyr Phe
2375 2380 2385

<210> 5
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> Primer

<400> 5
gttttcgcca tggcgcgctc ccaaaccctaa

30

<210> 6
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> Primer

<400> 6
ttcatcaaac aatatctttt cgccatggcg

30

<210> 7
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> Primer

<400> 7
caaaaagaca gttgaattcg acatggatag

30

<210> 8

<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> Primer

<400> 8
gacgcagaat tcaccagtca aagaatcaaa gag

33

<210> 9
<211> 20
<212> DNA
<213> Artificial sequence

<220>
<223> Primer

<400> 9
tggatgatga cagctgtgtc

20

<210> 10
<211> 20
<212> DNA
<213> Artificial sequence

<220>
<223> Primer

<400> 10
tgtagtcgct gctcaatgtc

20

<210> 11
<211> 23
<212> DNA
<213> Artificial sequence

<220>
<223> Primer

<400> 11
tggtttctga gaacattccc tga

23

<210> 12
<211> 10
<212> PRT
<213> Artificial sequence

<220>
<223> Rad3/Esrlp

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = Isoleucine or Valine

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Leucine or Phenylalanine

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = Glutamine or Glutamic Acid

<400> 12

Lys Phe Pro Pro Xaa Xaa Tyr Xaa Trp Phe
1 5 10

<210> 13
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> oligonucleotide oDH18

<400> 13

Leu Gly Leu Gly Asp Arg His
1 5

<210> 14
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> oligonucleotide oDH-16

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = Aspartic Acid or Asparagine

<400> 14

His Val Asp Phe Xaa Cys
1 5